NORMAN A. JOHNSON
Editor

CHARLES A. WHITEHEAD
Managing Editor

MYRON D. REESER
Business Manager

HERBERT A. STAUDERMAN
Advertising Manager

JAMES A. DOYLE
Promotion Manager

WILLIAM J. O'CONNOR
Production Manager

BERYL A. LAKNER
Circulation Manager

OFFICIAL PUBLICATION OF THE PROCEEDINGS, AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS

American Dyestuff Reporter was founded in 1917 and the Textile Colorist and Converter (formerly Textile Colorist) was incorporated with it in January, 1949. Published every other Monday, by the **HOWES PUBLISHING COMPANY, INC.**, 44 East 23rd Street, New York 10, N. Y. **C. R. Howes**, President; **Ernest J. Finan**, Executive Vice-President; **Norman A. Johnson**, Vice-President & Treasurer; **Myron D. Reeser**, Vice-President; **Clara Patrick**, Secretary.

Telephone SPring 7-9364

AMERICAN
DYESTUFF REPORTER

DEVOTED TO TEXTILE WET-PROCESSING

contents

VOLUME 46 DECEMBER 30, 1957 NUMBER 26

special articles

APRN Addendum 1008
Index to Patent Digest 1010
Index to Volume 46 ..... 1010A

aatcc proceedings

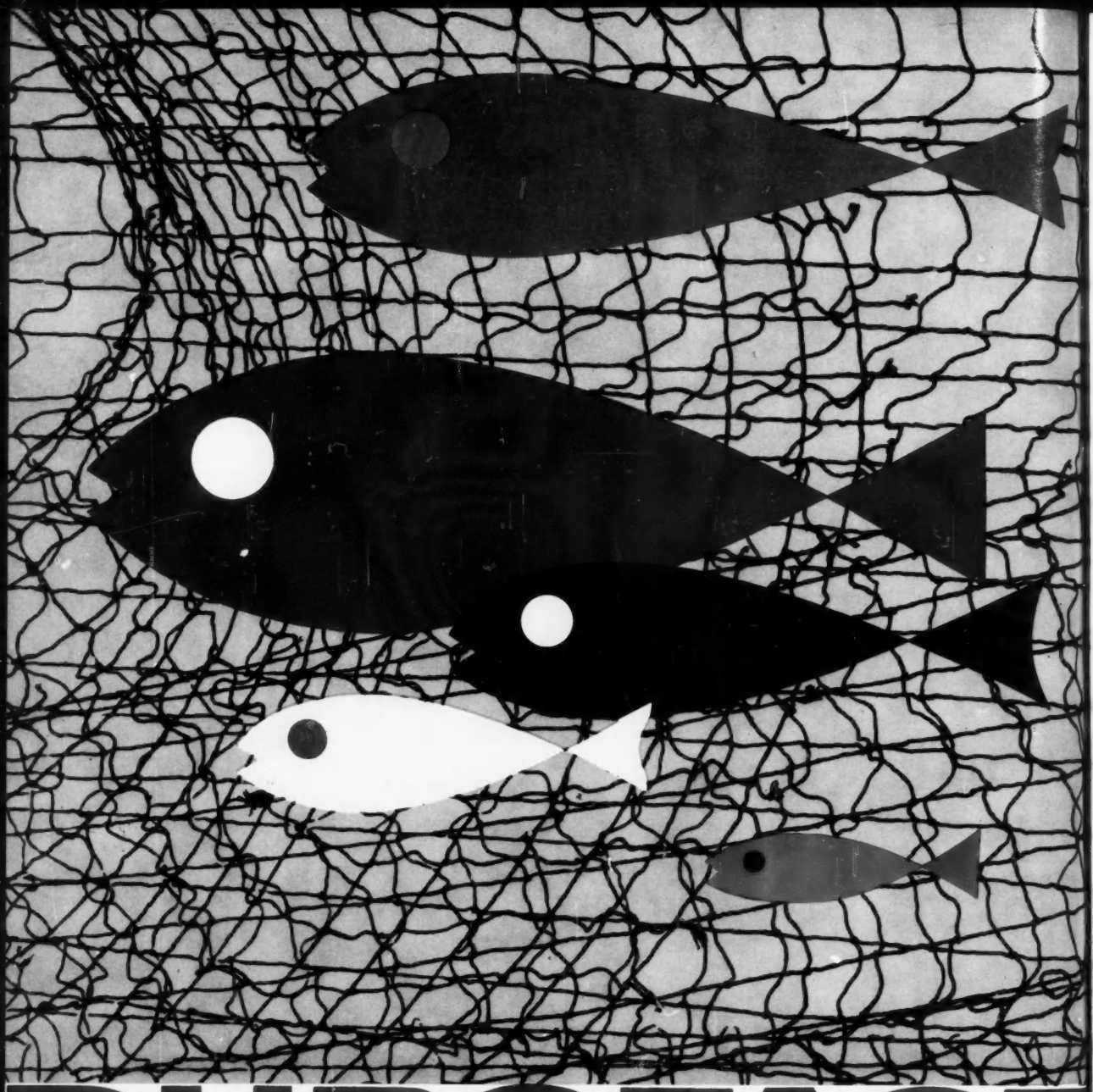
feature articles

Recent Developments in Carpet Dyeing P987
W J Wygand
The Effect of Silicone Softeners on Resin-treated Cottons P991
B G Simpson
President's Address P999
George O Linberg
The Pursuit of Happiness P1002
P J Wood

miscellaneous

AATCC Calendar P990
Activities of the Local Sections P1004
General Calendar 1009

Copyright, 1957, Howes Publishing Co. Inc
Contents of previous issues can be found by consulting the Industrial Arts Index and the Engineering Index, Inc, at your library



DUROFAST

A prize catch in colors that are fast, for rayons and cottons

SCARLET LF

YELLOW 2GLL

ORANGE GLFC

BLACK RL

GREY LVLN

Berkshire
COLOR & CHEMICAL CO.

Executive Offices: **DELAWANNA, N. J.**
Plants: **Delawanna, N. J. and Reading, Pa.**
Branch Office: **210 Albany Street, Springfield 5, Mass.**
Southern District Representative: **Valco, Inc., Thomasville, N. C.**

Proceedings of the
American Association of Textile Chemists and Colorists

Copyright, 1957, American Association of Textile Chemists and Colorists

December 30, 1957

Delaware Valley Section———

RECENT DEVELOPMENTS IN CARPET DYEING*

W J WYGAND
Technical Laboratory
Organic Chemicals Department
E I du Pont de Nemours & Co, Inc
Wilmington, Del

INTRODUCTION

ONE of the outstanding developments in the carpet industry during the past ten years is the tufting machine for producing broadloom carpets. The impact of this machine is amply illustrated by the fact that over fifty percent of the broadloom carpeting now produced is made on tufting machines (*1*). Changes have also been made in the fiber content of carpets. Nylon, rayon and cotton have become prominent carpet fibers and the acrylic fibers are currently making a strong bid for recognition in this field (*2, 3*). New dyeing methods for rawstock, yarn and piece goods have been introduced to the trade, several of which have been adopted on a commercial basis.

One of the more significant recent developments in wool dyeing is the neutral-dyeing premetalized dyes. These dyes were first introduced in this country as a class by Du Pont in 1949 (as the Capracyl dyes) and have been gradually replacing level-dyeing acid colors, acid-dyeing premetalized and chrome dyes in all forms of wool dyeing. The rise in popularity of the neutral-dyeing premetalized dyes is attested by the number of color lines and the shade range now available to the dyer.

In the ensuing discussion it will be pointed out that the neutral-dyeing premetalized dyes, by virtue of their excellent dyeing and fastness properties, are finding extensive use in the dyeing of rawstock, yarn and piece goods of both wool and nylon for end use in carpets.

*Presented before the Delaware Valley Section on Friday, November 1, 1957 at Kugler's Restaurant, Philadelphia, Pa.

Author's Note: The information contained herein is to our best knowledge true and accurate, but all recommendations or suggestions are made without guarantee, since the conditions of use are beyond our control. Furthermore, nothing contained herein shall be construed as a recommendation to use any product in conflict with existing patents covering any material or use.

DISCUSSION

RAWSTOCK DYEING———Prior to 1953, practically all rawstock dyeing was carried out by batch methods. Early in 1953, Du Pont introduced to the carpet trade a continuous process for dyeing wool rawstock in the last bowl of the wool-scouring train (*4*). With this method, scouring and dyeing is carried out in one operation. It is naturally suited to the carpet industry since large lots of rawstock (15,000 to 30,000 pounds) are usually dyed for a given shade. The advantages of savings in steam, water, and labor resulted in an enthusiastic acceptance of this process for production dyeing by several carpet manufacturers. It was doubly attractive since it required no large expenditure for new equipment. Yarns spun from continuously dyed stock were also found to be substantially stronger than yarns spun from kettle-dyed stock.

In the continuous process, the dyebath is charged with a predetermined amount of dye and sufficient formic acid to give a pH of 4.0 to 4.5. The addition of wool, formic acid and dyes is started and dyeing is carried out, usually at a rate of about 1,200 pounds of stock per hour. A production rate of 3,000 pounds an hour can be obtained if the wool and dye feeds are increased accordingly. Shades are matched during the dyeing operation by making adjustments in the dye feed. Exact shade control is dependent on the uniformity of the wool feed, and when the wool and dye feeds are closely synchronized it is possible to obtain dye lots requiring no correction batches to bring the shade to standard. When fluctuations do occur in the wool feed, the correction lots necessary to match the standard are usually of the same magnitude as those required when using batch methods. Commercial experience has shown that most of the lots dyed by this process require fewer shade corrections, and the levelness is generally superior to that of kettle dyeing.

Because of their rapid but even exhaustion properties and outstanding fastness to light and wet processing, the neutral-dyeing premetalized dyes are well suited to this application. Since these metal-complex dyes are inherently dull, a full shade range, including the clear bright shades, is attained by using selected neutral-dyeing acid colors along with the neutral-dyeing premetalized dyes. The continuous process is not limited to these dyes alone, but can also be used with many acid and chrome dyes. Full shades of navy and black have been obtained by continuous methods in the laboratory, and it appears that the procedure will find commercial use in the dyeing of apparel wools. These heavy shades are obtained by extending the dyeing time from 1½ minutes to six minutes and adding three more bowls to the scouring train for rinsing and chroming.

Nylon rawstock can also be dyed continuously by using the same dyes and method that are used for wool. Rayon rawstock has been dyed continuously with direct dyes, and also, blends of rayon and wool with selected direct and neutral-dyeing premetalized dyes. Vat dyes cannot be applied economically to rayon in the open scouring bowl because of the

large area of dyebath exposed to the atmosphere, which results in an excessive consumption of hydrosulfite. To overcome this problem, Du Pont recently introduced the Flowstock Process (5). The circulating dyebath propels the rawstock through an enclosed tube, and, since only a small part of the dyebath is exposed to the air, vat dyes and sulfur dyes can be applied to cotton and rayon rawstock continuously. Wool and nylon can also be dyed with appropriate dyes in the Flowstock machine. When dyeing the latter fibers, an appreciable savings in steam, over that used in the scouring bowl, should be possible.

YARN DYEING——Plied carpet yarns are usually dyed in skein form while singles yarns are often dyed on packages and plied after dyeing. Hard-twist yarns require a twist-setting operation to obtain the desired kink or texture; hence, these yarns are twist set in skein form since the yarn must be relaxed during the setting operation. When hard-twist yarns are made from dyed rawstock, twist setting is usually carried out by steaming the yarns in an autoclave under pressure (10 to 30 pounds psi gauge). This process is claimed to impart a more permanent twist than aqueous setting at atmospheric temperatures. The disadvantage of steam setting is in the fiber degradation that can occur, especially if pH and moisture conditions are not carefully controlled.

Dyeing hard-twist yarns in package form is not feasible, consequently considerable poundage of yarn is simultaneously skein dyed and twist set. A relatively recent development in the dyeing of these yarns is the use of pack-dyeing procedures. Pack-dyeing methods are claimed to have been in use in Europe for several years, but only recently practiced to any extent in this country. The Hussong-type machine is well suited to pack dyeing and permits a considerable increase in production since 2,000 to 3,000 pounds of a frieze-type yarn can be pack dyed in a machine that normally holds 1,000 pounds hanging. Such yarns can also be pack dyed in rawstock and package-dyeing equipment. While the dye lot size is not as large as with the Hussong type, many of these machines have the advantage of operating at temperatures substantially above the boil. Considerable savings in time and superior yarn twist have been noted in wool yarns dyed at 225°F.

The neutral-dyeing premetalized type dyes have contributed much toward the success of pack dyeing woolen hard-twist yarn. Proper control of the pH and dye exhaustion results in dyeings that are well penetrated and completely level. These yarns usually possess superior strength compared with yarns dyed with the level-dyeing acid colors, since the yarns are not subjected to prolonged dyeing cycles in sulfuric acid dyebaths. In pack dyeing, the scoured skeins are loaded into the machine and the machine filled with water at 90 to 100°F. A dyeing assistant, such as Capracyl Leveling Salt, is added along with an ammonium salt, eg, ammonium acetate or sulfate. After circulating for 10 to 20 minutes, the pH is adjusted to 7.0 to 7.5, the neutral-dyeing premetalized dyes added and the temperature slowly raised to the boil and dyeing continued for 45 to 60 minutes before sampling. A more recent development (6) in the application of the neutral-dyeing premetalized dyes permits dyeing to be carried out close to the isoelectric point of the wool (pH 4.0 to 4.5). This is accomplished by using a combination of Glauber's salt and a dyeing assistant, such as Capracyl Leveling Salt, as a retarding system. It should be pointed out that the amount of each agent used is critical and the recommendations must be followed closely for optimum results. The procedure recommended by Du Pont consists of dyeing for at least one hour at the boil with:

20.0% Glauber's salt (crystals)
1.5% Capracyl Leveling Salt and
4.0% acetic acid (56%).

A semimill-scale evaluation of this dyeing method produced dyeings with excellent penetration and levelness. Since the wool is dyed near the isoelectric or ideal point, wool damage should be minimized.

When twist setting hard-twist yarns of 100% nylon and blends of nylon and wool, complete yarn relaxation is of the utmost importance if uniform texture and a satisfactory set are to be obtained. Before dyeing and/or twist setting, the dry yarns are tumbled cold for one to three minutes in a tumble dryer or a wash wheel. If such equipment is not available, the skeins can be worked by hand. The finished skeins are usually kinkier, and the carpet exhibits improved texture and coverage.

Simultaneous dyeing and twist-setting procedures for 100% nylon hard-twist carpet yarns at temperatures of 205°F and 250°F have been demonstrated commercially (7). Excellent levelness and penetration are obtained with the Capracyl neutral-dyeing premetalized dyes applied with:

2% Duponol D Paste surface-active agent (owf)
2% Capracyl Leveling Salt (owf) and
1% ammonium hydroxide (28%) (owf).

The assistants are first added along with an antifoam agent and the bath run for ten minutes at 90 to 100°F. The Capracyl dyes are then added and the temperature raised to 208 or 250°F in no less than 60 minutes. Dyeing is carried out for one hour before sampling. When making color additions for shade matching, the bath is cooled to 160°F before adding the dyes.

Hard-twist carpets with the attributes of both wool and nylon have resulted in much trade interest in wool/nylon blends. These blends are especially attractive because of the superior twist-retention properties of the nylon, especially after shampooing. Soft twist yarns of wool and nylon are also being produced commercially. They can be union dyed in yarn form or the nylon and wool rawstock can be dyed separately to the same shade and then blended.

Selected acid-dyeing premetalized dyes, such as the Chromacyl dyes, will produce satisfactory unions in many shades on soft-twist yarns, but when dyeing hard-twist yarns with these dyes, problems of penetration and levelness are encountered. A satisfactory dyeing method overcoming these problems has been developed (8) and demonstrated commercially. A nylon resisting agent and selected neutral-dyeing acid or milling dyes are applied as follows:

The dyebath is set at 90° to 100°F with:

1.0–1.5% Nylon Resist (GDC)
5.0% ammonium acetate
0.5% Alkanol HCS surface active agent

and run for 10 minutes.

Before the dyes are added, the pH is checked and adjusted, if required, to approximately 7.0. The dyes are then added and the temperature raised to 205° F over 45 to 60 minutes. Dyeing is carried out for one hour before sampling. Additions are made by cooling to 160 to 180° F and running for fifteen minutes before increasing the temperature. Small amounts of acetic acid are usually added near the end of the dyeing cycle to promote dye exhaustion and to acidify the wool.

This method can be used both in hang dyeing and pack dyeing. Practice has shown that pack dyeing allows more yarn relaxation and produces carpets with outstanding texture and coverage. The typical carpet shades shown in Table I exhibit lightfastness of 40 to 80 hours (Fade-Ometer).

TABLE I

Lightfastness of typical carpet shades

		Lightfastness (Fade-Ometer hours)
Champagne		
0.025%	Du Pont Neutral Brown BGL	80
0.01%	Du Pont Neutral Gray L	
Gold		
0.02%	Du Pont Neutral Gray L	
0.05%	Du Pont Anthraquinone Rubine R	40
0.16%	Du Pont Milling Yellow 5G	
Beige		
0.045%	Du Pont Neutral Brown BGL	
0.03%	Du Pont Neutral Gray L	80
0.03%	Du Pont Anthraquinone Rubine R	
Nutria		
0.55%	Du Pont Neutral Brown BGL	
0.015%	Du Pont Neutral Gray L	40
0.05%	Du Pont Anthraquinone Rubine R	
Cedar		
0.5%	Du Pont Neutral Brown BGL	
0.08%	Du Pont Neutral Gray L	80
0.05%	Du Pont Anthraquinone Rubine R	
Gray		
0.07%	Du Pont Neutral Gray L	80
0.02%	Du Pont Anthraquinone Rubine R	
Light Green		
0.02%	Du Pont Anthraquinone Green GNN	80
Dark Green		
0.10%	Du Pont Anthraquinone Green GNN	80
0.12%	Du Pont Neutral Brown BGL	
0.03%	Du Pont Milling Yellow 5G	

Additional dyes that can be used to extend the shade range include:

Du Pont Anthraquinone Iris R
Du Pont Anthraquinone Violet RN
Du Pont Anthraquinone Violet 3RN
Du Pont Anthraquinone Blue 2GA
Du Pont Anthraquinone Blue SKY
Du Pont Anthraquinone Milling Blue BL
Potacyl Fast Blue 5R.

PIECE DYEING——Piece-dyeing procedures offer many advantages to carpet manufacturers. Among these are 1) lower inventories, 2) little or no loss on slow-moving shades, 3) more rapid delivery, 4) no dyed waste stock or yarn, 5) greater flexibility in introducing new shades and dropping obsolete ones, and 6) custom dyeing.

With the introduction of tufted carpets came huge, twenty-foot becks for piece dyeing broadloom widths of carpeting. These machines are very sturdy since the average tufted carpet, when wet, weighs 16 to 20 pounds per square yard (*9*), and a normal full load of 100 to 120 yards of carpeting can weigh as much as 10,000 pounds. Side-to-center variations were encountered in this equipment and circulating pumps were later built into these machines to assure more even dyeing by constant movement of the dyebath.

The use of nylon in tufted carpets required the development of suitable piece-dyeing procedures for this fiber. Disperse dyes are generally used, but for maximum light- and wetfastness properties Du Pont recommends Capracyl neutral-dyeing premetalized dyes. In this case the carpet is first treated with:

2% Duponol D Paste surface active agent (owf)
2% Capracyl Leveling Salt (owf)
1% ammonium hydroxide (owf) and a suitable antifoam agent

at 100° F for 10 to 15 minutes. The Capracyl dyes are then added and the temperature slowly raised to 180 to 200° F and dyeing continued for 45 minutes before sampling. Thousands of yards of tufted nylon carpet have been dyed by this method.

Even using the best available dyes and the best-known techniques, the dyer occasionally encountered side-to-center shading problems. The search for available equipment that would eliminate this problem led to the adoption of another piece of equipment capable of dyeing piece goods in open width, the Burlington Beam Dyeing Machine (*10*). The beam-dyeing machine has a horizontal cylindrical outer chamber which houses a perforated beam on which the fabric or carpet is wrapped to the desired thickness. In this machine, the carpet is held stationary and the dye liquor is pumped alternately inside-out and outside-in through the carpet. Three of these machines, capable of handling 15-foot carpeting, all of which can operate at elevated temperatures, are now in use.

Until recently, batch-dye procedures represented the only means of piece dyeing 15-foot broadloom carpeting. Pad-steam methods have been used for the continuous piece dyeing of rayon and cotton carpets in widths up to sixty inches employing methods similar to those used in the dyeing of flat goods. Wide carpeting could not be handled by the pad-steam process because of the roll deflection or bowing that occurs in applying pressure to the rolls of conventional padders.

The Niptrol padder has overcome this problem by the use of a unique air-pressure system that applies pressure evenly along the entire pad roll (*11*). On a 16½ foot padder it has been successfully demonstrated that a 15-foot carpeting can be padded evenly without side-to-center shade variations. Suitable pad-beck and pad-steam procedures utilizing this equipment have been reported for the application of vat dyes and direct dyes to cotton and rayon (*12*).

With the manufacture of woolen tufted carpets, it became necessary to develop piece-dyeing methods for these carpets. The use of the dye beck and the beam-dyeing machine was investigated. The dye beck with its high degree of fabric agitation left the wool carpets extremely felted and matted. The beam-dyeing machine produced dyeings superior to those obtained on the beck, but the desired texture and quality still were not attained.

Pad-steam techniques for dyeing wool carpets appeared to be sound approaches, since there would be a minimum disturbance of the wool fiber for a relatively short period of time. With the Niptrol padder, the desired extraction and uniformity of padding was possible even in 15-foot widths of either tufted or woven broadloom carpeting.

A pilot-plant unit consisting of a Niptrol padder 72 inches in width, a 20-foot tower steamer and a 20-foot rinse tank was installed at the Freehold, New Jersey plant of the A&M Karagheusian Company. Technicians from Karagheusian, Rodney Hunt, and Du Pont, in a cooperative effort, established successful dyeing procedures for carpets made of wool, nylon, rayon/wool blends and nylon/wool blends, not only in solid shades but also in moresque effects.

Since the padded fabric is exposed to the steam atmosphere for only a short period of time, dyes that will develop on the wool fiber during this short exposure and still meet the high lightfastness requirements for carpets are needed. Neutral-dyeing premetalized dyes are naturally suited to this process and contribute to the success of this development.

The procedure that follows has been found to give satisfactory dyeings on four-foot width all-wool carpeting with no side-to-center or end-to-end variations. This method is believed to be an outstanding development in the piece dyeing of wool carpeting. Textures unattainable by other dyeing methods are possible and it appears likely that this process will soon be widely used for dyeing not only wool but any fiber or blend of fibers that may conceivably be used in carpet production.

Although developed primarily for wool, the following method has also been used for 100% nylon, 100% rayon (with direct dyes) and blends of these three fibers.

PROCEDURE

To insure complete solution of the dye, the dry dye is added to one half its weight of Cellosolve solvent and stirred to a smooth paste. Boiling water is then added and the resultant

dye solution strained into the make-up tank.

2.0 ozs/gal surface active agent of the Alkanol SMO type (necessary for thorough wetting and penetration of the carpet) and 0.5 oz/gal surface active agent of the Alkanol HCS type (used to retard dye exhaustion) are then added and the padding solution brought to the required volume at a temperature of 70 to 75° F.

It is also desirable to adjust the pH of the pad solution to 8.0 to 8.5 with a small amount of ammonium hydroxide.

The fabric is padded at maximum extraction or minimum pickup (40 to 50% for wool) and steamed for five to ten minutes depending on the depth of shade. The material is then rinsed in a dilute acetic acid bath, extracted, dried, brushed and sheared and finished for shipment. Dye exhaustion during padding and resultant end-to-end shading or tailing are controlled by the following factors:

1) The padding temperature is kept as low as possible (70 to 75° F).
2) Dyes with similar exhaustion rates are employed wherever possible.
3) A very shallow pad box is used.

The success of this pilot-plant operation offers sufficient encouragement to proceed on a production basis on broadloom widths of nine, twelve and fifteen feet.

Neutral-dyeing premetalized dyes and, where added brightness is needed, selected neutral-dyeing acid colors provide a full range of carpet shades on Jacquard, velvet, frieze, cut and loop pile on both tufted and woven goods. Excellent fastness to crocking, shampooing and sunlight and Fade-Ometer lightfastness of 80 to 120 hours or better can be obtained.

The following Du Pont dyes have been found well suited to this operation:

Capracyl Yellow GW
Capracyl Yellow 3RD
Capracyl Orange R
Capracyl Brown GR
Capracyl Brown 2R
Capracyl Dark Brown B
Capracyl Red B
Capracyl Violet BD
Capracyl Gray GN
Capracyl Blue 3G
Capracyl Red G
Capracyl Olive Green B
Du Pont Anthraquinone Blue SWF
Du Pont Anthraquinone Green GNN
Du Pont Neutral Brown BGL

Some typical carpet shades that have been produced by this method are:

Beige
0.33 oz/gal Capracyl Dark Brown B
0.0133 oz/gal Capracyl Red B

Gray
0.266 oz/gal Capracyl Gray GN
0.066 oz/gal Capracyl Red B

Turquoise
0.16 oz/gal Du Pont Anthraquinone Blue SWF
0.066 oz/gal Capracyl Yellow GW
0.0266 oz/gal Capracyl Yellow 3RD

Green
0.16 oz/gal Du Pont Anthraquinone Green GNN
0.08 oz/gal Capracyl Gray GN
0.04 oz/gal Capracyl Yellow GW

SUMMARY

Recent developments in dyeing procedures for stock, yarn and piece goods have been described. The use of the neutral-dyeing premetalized dyes have contributed largely to the success of the continuous rawstock dyeing process, pack-dyeing procedures for both wool and nylon, and to the development of piece-dyeing procedures by pad-steam processes. Further refinements and developments will undoubtedly be forthcoming. The Du Pont Flowstock Process is an example of the refinement of the continuous rawstock dyeing process.

Pack-dyeing procedures should continue to grow in popularity and the pad-steam dyeing process for wool carpets will probably be established soon as a fully commercial dyeing procedure.

TRADEMARKS

Capracyl, Chromacyl, Pontacyl, Alkanol, and Duponol are registered trademarks of E I du Pont de Nemours & Co, Inc; Niptrol is a registered trademark of Rodney Hunt Machine Co; and Cellosolve is a trademark of Union Carbide Chemicals Co, a division of Union Carbide Corp.

LITERATURE CITED

(1) Shuttleworth, H L, *Textile Bull* **82**, No. 3 (March, 1956).
(2) Anon, *Chem Eng News* **35**, No. 2, 18 (January 14, 1957).
(3) Anon, *America's Textile Reptr* LXX1, No. 2, 32 (January 10, 1957).
(4) *Tech Bull (du Pont)* **11**, No. 1, 37 (March, 1955).
(5) Fletcher, J M, *Am Dyestuff Reptr* **46**, No. 9, 319 (May 6, 1957).
(6) Justus, W, *Can Textile J* **73**, No. 20, 49 (October 5, 1946).
(7) *Tech Bull (du Pont)* **11**, No. 3, 122 (September, 1955).
(8) Muller, C E and Nusslein, J, U S Pat 2,325,972, General Aniline and Film Corp (1943).
(9) Hopkins, M G, *Textile Age* **21**, No. 1 (January, 1957).
(10) Meunier, P L, *Am Dyestuff Reptr* **45**, No. 11, P327 (May 21, 1956).
(11) Anon, *Textile Age* **20**, No. 11, 42 (November, 1956).
(12) Fletcher, J M, *Tech Bull (du Pont)* **12**, No. 3, 114 (September, 1956).

AATCC Calendar

COUNCIL
Jan 24 (Hotel Statler, New York, NY); May 23 (Philadelphia, Pa); Sept 19, 1958 (Charlotte, NC)

NATIONAL CONVENTIONS
Oct 30-Nov 1, 1958 (Hotel Conrad Hilton, Chicago); Oct 8-10, 1959 (Sheraton Park and Shoreham Hotels, Washington, DC); Oct 6-8, 1960 (Sheraton Hotel, Philadelphia, Pa); September 28-30, 1961 (Buffalo, NY)

HUDSON-MOHAWK SECTION
Jan 24 (Albany, NY); Mar 28 (Johnstown, NY area); May 16 (Ladies Night); June 20 (Summer outing)

MID-WEST SECTION
Feb 15 (Hotel Bismarck, Chicago, Ill); April 19 (Netherland Hilton Hotel, Cincinnati, O); June 13-14 (Outing—Browns Lake Resort, Burlington, Wis)

NEW YORK SECTION
Feb 7 (New York, NY); April 11 (New Jersey area)

NIAGARA FRONTIER SECTION
Feb 21 (Buffalo); Apr 4 (Joint meeting)

PIEDMONT SECTION
Jan 24-25 (Clemson House, Clemson, SC); Apr 11-12 (Washington Duke Hotel, Durham, NC); June 6-8 (Outing—Grove Park Inn, Asheville, NC); Sept 19-20 (Hotel Charlotte, Charlotte, NC)

Now Available . . . .

Proceedings of the Perkin Centennial

containing all of the papers presented during the Perkin Centennial held in New York during the week of September 10th, 1956.

468 pages
$10.00 postpaid

Send orders to
National Headquarters
American Association of Textile Chemists and Colorists, PO Box 28,
Lowell, Massachusetts

Mid-West Section———

THE EFFECT OF SILICONE SOFTENERS ON RESIN-TREATED COTTONS*

B G SIMPSON

Fiber Treatment Laboratory
Dow Corning Corp
Midland, Mich

INTRODUCTION

AMONG the many advances in textile chemical technology in recent years, the successful application of resin to cottons is certainly one of the foremost. The finishing industry is by now quite familiar with the various thermosetting resins and their effects on cotton. Their ability to chemically modify cellulosic fibers has resulted in enthusiastic consumer acceptance of what are often referred to as "wash-and-wear" cottons.

We shall not dwell on the chemistry of the thermosetting resins as applied to cottons, as there are many excellent articles available on this subject. Let it suffice to say that along with the many indisputable advantages they impart to the cellulosics, there are a few deficiencies. These are primarily due to a loss in extensibility of the fiber upon being crosslinked by the resin. This results in reduced physical strength and, at times, in a poor hand. Finishers have attempted to overcome these deficiencies by what is now common practice, the addition of a softener.

The function of the softener in this particular application is to modify or soften the hand and to regain, at least in part, the lost physical properties. The softener accomplishes this by promoting interfiber lubricity. This then becomes one of the more important criteria of a good softener: *it must be a good lubricant.* Of course, there are other factors that also should be considered, such as durability, cost, and nondiscoloration of the fabric.

Although there are many softening preparations commercially available, by far the most common are those based on long-chain fatty compounds, such as sulfated tallows or oils. In this instance, the fatty residue provides the softening or lubricating action. It should be mentioned that this type of softener lies on the outer surface of the fiber and is not chemically linked as is the resin. Since no permanent bonding exists, there is little to hold the organic molecule on the fiber during the drycleaning or laundering of the fabric.

Silicones are a comparatively recent step in the evolution of softeners. Finishers who had previously known silicone emulsions only as durable water repellents found that they could impart many desirable characteristics to fabrics if they used them as softeners.

Chemically, the silicone fluids used in these emulsions are blends of two silicone polymers:

1) *Dimethylpolysiloxane*

$$(CH_3)_3Si-O-\left[\begin{matrix}CH_3\\ Si-O\\ CH_3\end{matrix}\right]_n-Si(CH_3)_3$$

where n = 500–600 units

and

2) *Methylhydrogenpolysiloxane*

$$(CH_3)_3Si-O-\left[\begin{matrix}H\\ Si-O\\ CH_3\end{matrix}\right]_n-Si(CH_3)_3$$

where n = 40–60 units

Each of these fluids fulfills a particular function in the softener structure. The dimethylpolysiloxane is generally credited with the lubricating characteristics by virtue of its many organic groups, while the methylhydrogenpolysiloxane contributes durability. The latter is accomplished by the hydrolysis and condensation of some of the available silane hydrogens to form a siloxane-oxygen crosslinkage. When this step is accomplished after application to a fabric, it results in a tough, transparent, hydrophobic, pliable film encasing each individual fiber. Although this crosslinking reaction will occur because of heat alone, the speed and degree of crosslinking are enhanced by the addition of small amounts of catalysts. Usually metallic compounds, such as zinc or tin salts, are used. When the finisher wants water repellency, a catalyst is used. However, for hand or softening effects only, the catalyst is often omitted.

Another difference between the water-repellent application and the softener application is the amount of silicone applied. For water repellency, the treating bath is generally adjusted so as to deposit 1.0% or more silicone solids on the fabric, while for softeners this figure is 0.5% or less.

The silicone "skin" that is formed around the fiber is insoluble in water and in the common drycleaning solvents. Therefore the silicones should be more durable than the organic-type softeners. However, durability alone is not enough. As previously mentioned, a softener's lubricating properties are of prime importance in helping to regain some of the lost physical strength of a resin-treated cotton. Several lubricity studies have been undertaken comparing silicone oils with organic oils. Tabor and Hansen, in comparing the two types of oils at the same viscosity, demonstrated that the silicones exhibited an appreciably lower coefficient of friction under conditions of hydrodynamic lubrication (*3*). This work was accomplished with nylon yarn and nylon and Dacron monofilaments. Currie and Hommel have shown the superior characteristic of silicone oils vs organic oils as a lubricant for nylon under conditions of boundary lubrication (*1*). While none of the above work was performed directly on cotton, it does reflect on the inherent lubricating characteristics of the fluids.

In actual practice, the finisher has found many uses for silicone softeners on a wide variety of fabrics ranging from flannel to tricot. They are also being used as napping softeners and lubricants for the brushing operation. They are preferred on naphthol-dyed cottons since they don't appear to effect shade changes or crocking as much as the organics. And they are applied as a pretreatment prior to schreinering or embossing. Another application in which silicones make one of their greatest contributions as softeners is in resin formulations. It was felt that, because of the growing importance of the resin-type finish and because of the lack of silicone-softener informa-

*Presented before the Mid-West Section on October 26, 1957 at the Hotel Bismarck, Chicago, Ill.

tion, further data in the field should be obtained. Therefore the purpose of this investigation is to compare the effects of the various silicone and organic softeners on the physical properties of cotton treated with typical resin formulations.

EXPERIMENTAL

The fabric used in this study was 39-inch, 80/80, 4.00 ounce/yard mercerized cotton print cloth. This was considered representative of the fabric ordinarily used in wash-and-wear finishing. Although many different resin-softener combinations were tried, the majority of this work is with three typical resin combinations:

1) Blend of dimethylol ethylene urea (DMEU) and methylated methylol melamine;

2) Blend of DMEU and acrylic resin; and

3) Blend of DMEU and polyvinyl alcohol (PVA).

An organic amine-type catalyst was used to catalyze the resins. Each of the three resin blends was used in conjunction with four or five softeners plus a control. There are hundreds of commercially available organic softeners and to include all of these would make the evaluation impractically long. This study was therefore limited to three of the more widely used organics: one cationic, one anionic, and one nonionic. Various nonionic silicone emulsions without catalyst were also used as softeners. In separate evaluations, some of the silicone emulsions were evaluated with a silicone-curing catalyst in addition to the resin-curing catalysts.

Table I gives the various finishing agents and the percentages used. The concentrations used were taken from commercial practice and represent comparable costs of the silicone and organic softeners.

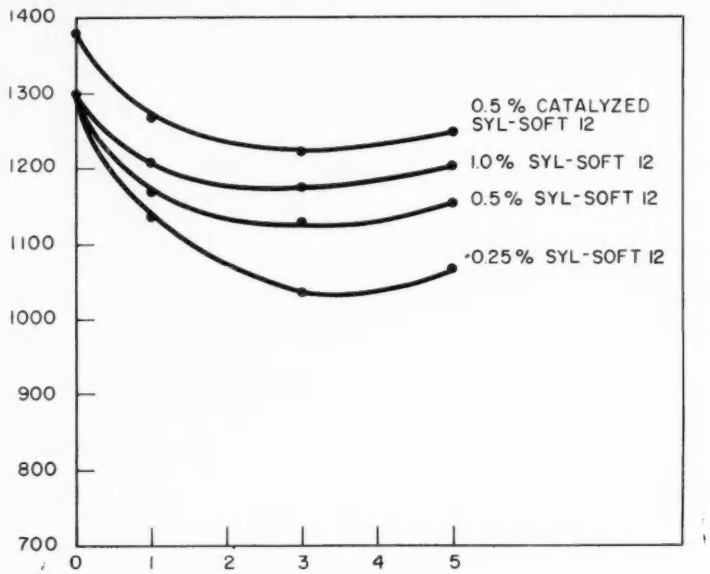


Figure 1
Plot of tear strength
Sum of warp & fill (grams) vs percent solids on fabric
DMEU-melamine blend

The fabric was padded in a three-roll Butterworth ten-inch laboratory pad using a single-dip, single-nip threading with a roll gage pressure of approximately forty pounds. This pressure gave approximately seventy-five percent wet pick-up. The fabric was then dried at 160°F and cured at 300°F for seven minutes. To avoid any premature removal of softeners, the afterwash was omitted.

Since this investigation is primarily a study of softeners and their effects, their durability is an important factor to consider. For this reason the first set of physical tests was run without any laundering or scouring; the other tests after one, three and five launderings. Except where otherwise specified, the launderings were carried out in a Westinghouse home washer and dried in a Westinghouse drier to simulate home laundering conditions. The following tests were conducted in accordance with Federal Specification CCC-T-191b(*2*): Tensile Strength (Method 5104) on the Scott Tester; Tear Strength (Method 5132) on the Elmendorf Tear Tester; Flex Abrasion Resistance (Method 5200) on the Stoll Flex Machine; and Crease Resistance (Method 5212) on the Monsanto Wrinkle Recovery Tester. All tests were conducted at 70°F and 65% relative humidity after the samples had been conditioned for at least twelve hours.

In addition to the standard tests, two resin formulations were evaluated in sewing tests, namely, the DMEU-melamine and DMEU-acrylic formulations. Each of these resin blends was studied alone, and in combination with one silicone and one organic softener. The latter were selected on the basis of their performance in preceding tests. The sewing tests themselves were of the yarn-severance type and were conducted before and after one laundering. They were performed on three layers of fabric laid one upon the other with the warp and fill yarns of all the pieces running in the same directions. The plies were then sewn together with two rows of single-lock stitches approximately ½ inch apart.

TABLE I
Product concentrations

Resins	
DMEU-melamine blend 3 : 1 solids ratio	Each blend resulted in approximately 8% resin solids on the fabric unless otherwise indicated.
DMEU-acyrlic blend 3 : 1 solids ratio	
DMEU-polyvinyl alcohol blend 3.5 : 1 solids ratio	
Organic Softeners	
Anionic softener	All the organic softeners were padded along with the resin from a 3.0% bath concentration with a 75% wet pick-up resulting in approximately 2.2% softener as received on the fabric.
Cationic softener	
Nonionic softener	
Silicone Softeners	
Syl-soft 10	Syl-softs 10 and 12 were padded along with the resin from a 2.1% bath with a 75% wet pick-up resulting in approximately 1.6% as received on the fabric. This deposits about 0.5% silicone solids on the fabric.
Syl-soft 12	
Dow Corning 104	The DC 104 was padded along with the resin from a 1.6% bath with a 75% wet pick-up resulting in approximately 1.2% as received on the fabric. This deposits about 0.5% silicone solids on the fabric.
Catalysts	
Organic amine type resin catalyst	15% catalyst based on the weight of the resin solids.
XEY-21 silicone catalyst	20% catalyst based on the weight of DC 104 Emulsion as received.
XEY-21 silicone catalyst	15% catalyst based on the weight of Syl-softs 10 and 12 as received.

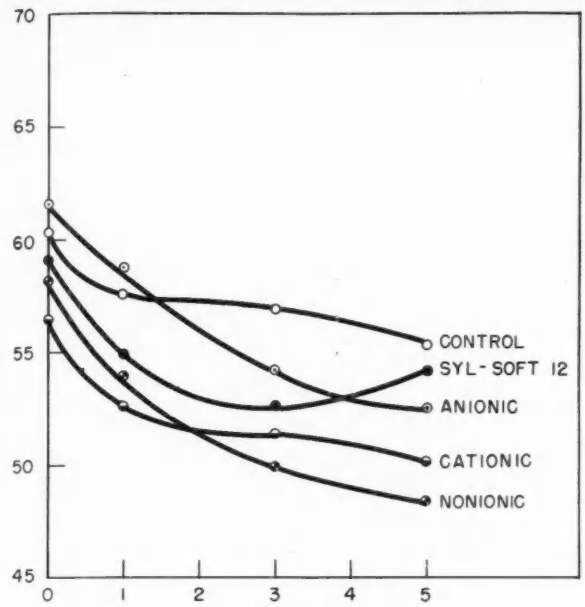


Figure 2
Plot of tensile strength
Sum of warp & fill (lbs) vs no. of launderings
DMEU-melamine blend

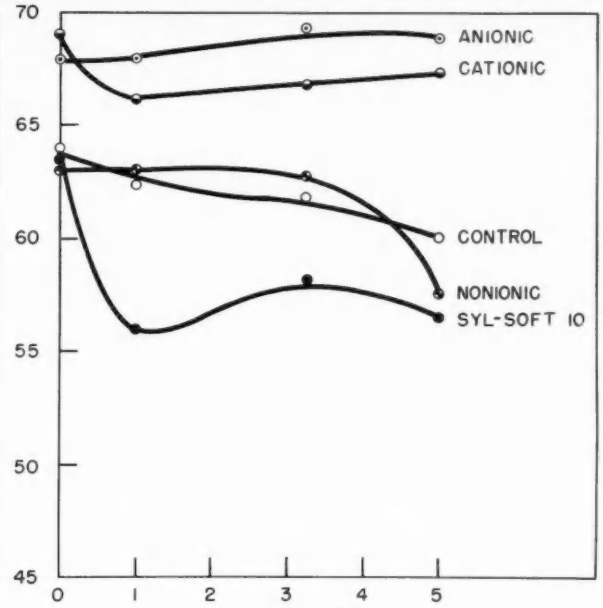


Figure 3
Plot of tensile strength
Sum of warp & fill (lbs) vs no. of launderings
DMEU-acrylic blend

The seams were in the shape of an "L," with each leg about fifteen inches long, so that the stitches ran parallel to both the warp and the filling. The stitching was done with a No. 4 needle using approximately twelve stitches per inch. The sewing machine (a 31-15 Singer) was run at 3200 rpm to obtain maximum cutting. Earlier tests indicated that a high speed such as this was necessary to obtain a comparison of the lubricating properties of the softeners. The last three inches of the middle layer of fabric of the second row of stitching in both the warp and fill direction were then inspected for the number of cut threads and tabulated as percent thread severance. This testing procedure is similar to that recommended by the Textile Distributors Institute, Inc (4) and to Federal Specification CCC-T-191b, Method 5400 (2).

DISCUSSION

As previously mentioned, the softener concentrations used were taken from commercial practice and represent comparable costs. It might be well to elaborate a bit on this point before proceeding since silicones are considered by some as more expensive to use than other types of softeners. One of the interesting things about silicones is that the physical property values that are imparted to the fabric change very little within wide concentration variations. Although most of this work is based on 0.5% silicone solids on the fabric, it was found that similar results will be obtained whether this amount is 1.0% or 0.25%. This is demonstrated in Figure 1.

In addition, one may increase most of the physical property values by increasing the degree of crosslinking of the silicone. An example of this is also presented in Figure 1, which shows that the catalyzed 0.5% concentration gives higher tear-strength values than the uncatalyzed 1.0% concentration. It thus becomes apparent that one may decrease the amount of silicone used to a point where its cost per unit area of fabric is equal to or less than that of the organic softeners. At the same time the treated fabric will retain the physical property advantages of the silicone shown at higher concentrations.

The results of the tests are graphically presented in Figures 2 through 19 and may be summarized as follows.

TENSILE STRENGTH——An 8% decrease in tensile strength was noted after the addition of 0.5% silicone solids alone to the untreated cotton and cured in the normal manner as shown in Figure 16. This loss is due only in part to the silicone. The rest may be attributed to other factors, such as the high curing temperature to which the cotton was subjected. When the various softeners are used in conjunction with the resin blends, a few variations were noticed, as shown in Figures 2, 3 and 4. The anionic gave the best tensile strength values in all formulations. This was the only instance in any test that a single softener was clearly superior. The other two organic softeners and the silicones performed about the same. The silicones appeared slightly better in the DMEU-PVA and DMEU-melamine formulations from a durability standpoint. A point of interest lies in the noticeable drop in tensile strength values of the silicone-treated samples after the first laundering. Thereafter the results are fairly constant. This was generally true of all the physical tests. The organic softeners, on the other hand, do not always demonstrate this tendency to level out after the initial laundering.

TEAR STRENGTH——A 20% increase in tear strength was noted after the addition of 0.5% silicone solids alone to the untreated cotton and cured in the normal manner, as shown in Figure 17. When the softeners are used with the resin blends, the silicones generally appear to give higher tear strength values and better

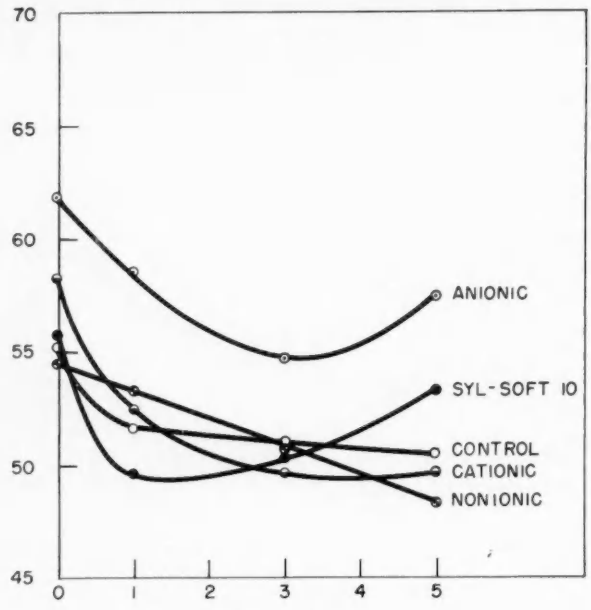


Figure 4
Plot of tensile strength
Sum of warp & fill (lbs) vs no. of launderings
DMEU-PVA blend

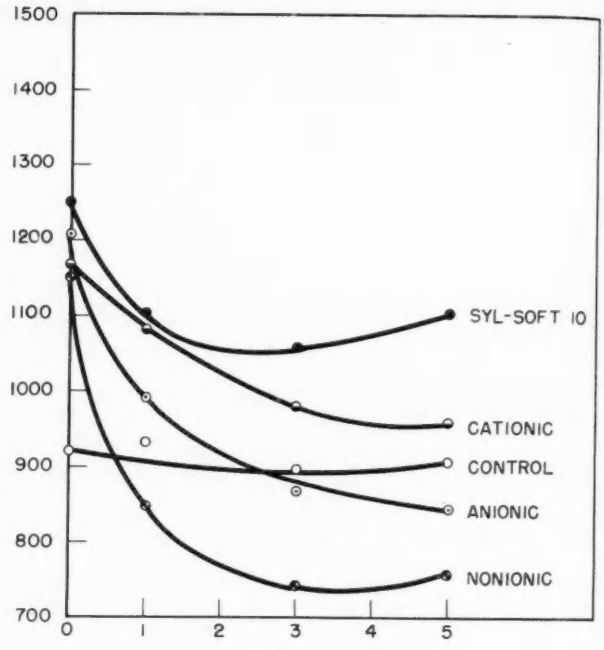


Figure 5
Plot of tear strength
Sum of warp & fill (grams) vs no. of launderings
DMEU-melamine blend

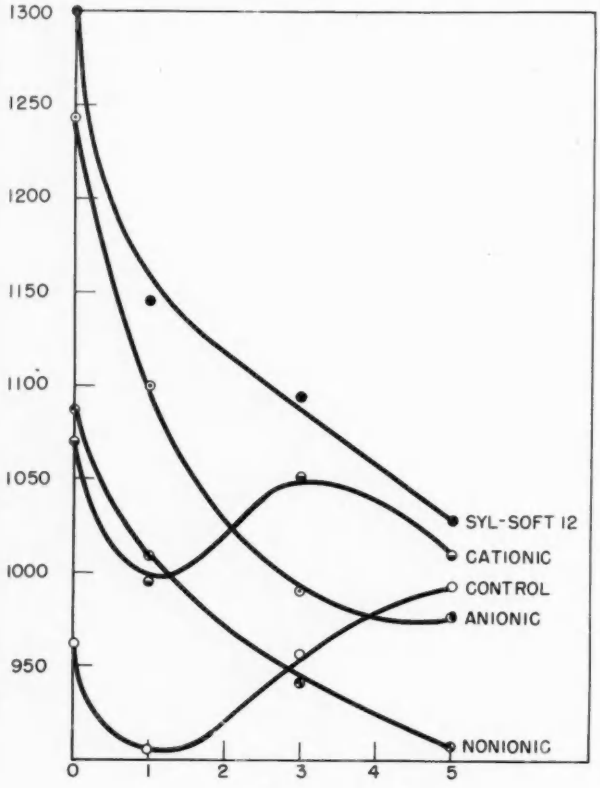


Figure 6
Plot of tear strength
Sum of warp & fill values (grams) vs no. of launderings
DMEU-acrylic blend

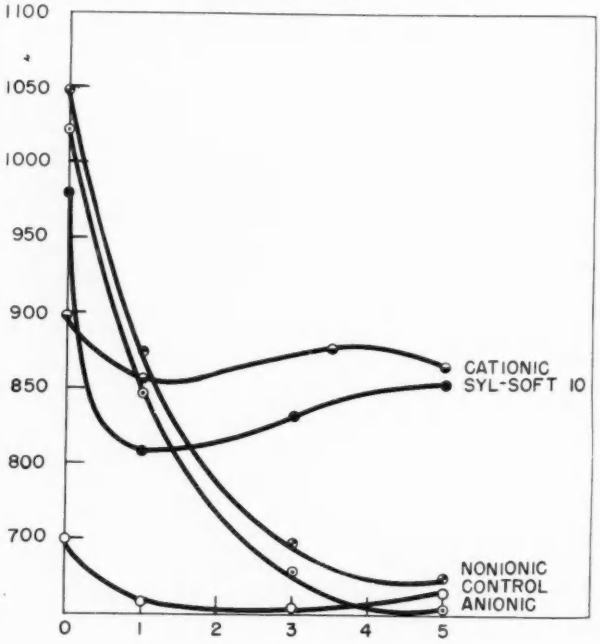


Figure 7
Plot of tear strength
Sum of warp & fill values (grams) vs no. of launderings
DMEU-PVA blend

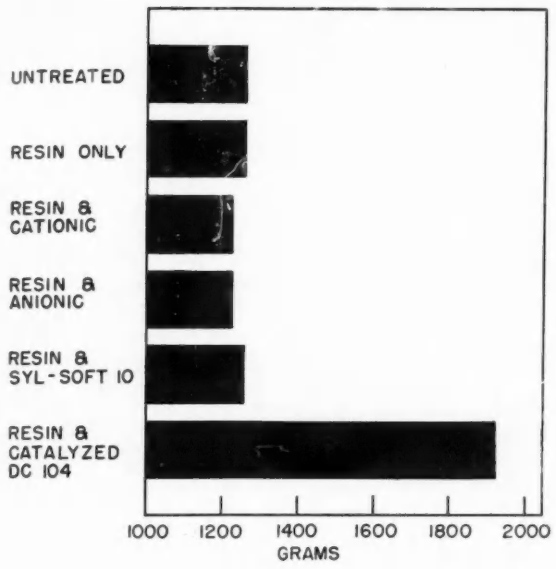


Figure 8
5% Urea-formaldehyde resin
Tear strength values after 25 launderings
160°F reversing wheel

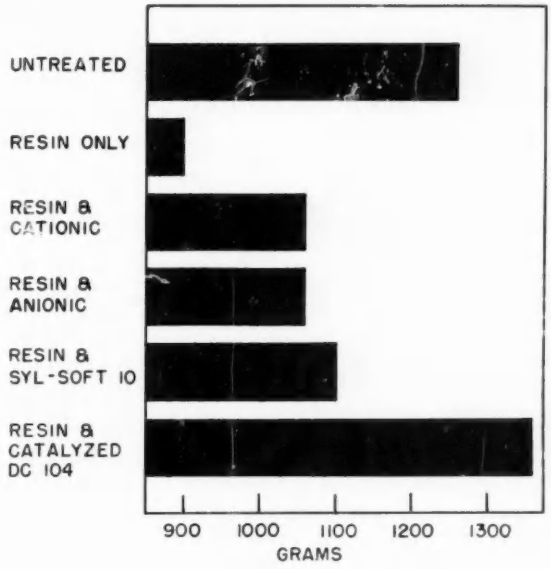


Figure 9
5% DMEU resin
Tear strength values after 25 launderings
160°F reversing wheel

durability than the organics, as shown in Figures 5, 6 and 7. Only in the DMEU-PVA formulation did an organic (the cationic) appear superior. The decrease in organic durability is especially noticeable in the DMEU-melamine formulation. In some cases the organic tear strength values were below that of the no-softener control after five launderings. The no-softener control remained fairly constant throughout the five launderings.

It may be well to point out at this time the durability of the silicones under extreme conditions. As a side evaluation, several samples of the test cotton were treated adding 5% DMEU solids with several softeners and 5% straight urea-formaldehyde using the same softeners. The samples were then subjected to twenty-five 40-minute launderings in a reversing-wheel-type machine at 160°F. The results of this evaluation are given in Figures 8 and 9. The uncatalyzed silicones gave slightly higher tear strength than the organics, though in both instances a comparison with the controls indicated that most of the softener was removed. The catalyzed silicones, however, demonstrated superior durability. With both types of resins the catalyzed silicones gave tear-strength values approximately 50% higher than the resin-treated controls.

FLEX ABRASION——A 70% increase in abrasion resistance was noted after the addition of 0.5% silicone solids alone to the untreated cotton and cured in the normal manner as shown in Figure 18. When the softeners are used with the resin blends, however, the organic-softened samples appeared substantially superior, as shown in Figures 10, 11 and 12. They demonstrated higher flex values, and equal or superior durability in the DMEU-PVA and DMEU-acrylic formulations, compared to the silicone emulsions. The organics and the silicones exhibited approximately the same values in the DMEU-melamine formulation. As may be observed, the general durability trend is a slight increase after the initial laundering drop. This is in contrast to the no-softener control, which demonstrated varying degrees of decreasing values with increasing launderings.

WRINKLE RECOVERY——A 15% increase in wrinkle recovery was noted with the addition of 0.5% silicone solids alone on the untreated cotton and cured in the normal manner, as shown in Figure 19. When the softeners are used with the resin blends, the silicone-softened samples appeared substantially superior, as shown in Figures 13, 14 and 15. Almost without exception, all of the silicones exhibited higher values and better durability than all the organics evaluated. Durability differences between the two classes of softeners are quite apparent in the DMEU-acrylic formulation where there is an average of approximately sixty degrees difference in wrinkle recovery after five launderings. As may be observed, the organics did not improve on the no-softener control (and in some cases had lower values), whereas the silicones generally improved on the control (in many instances, by a substantial margin).

The increased wrinkle-recovery values that are realized when silicone is added to a resin formulation give rise to the possibility that the resin content could be decreased somewhat, and still retain high enough wrinkle recovery to qualify as wash-and-wear. (A finish that can give wrinkle-recovery values of 250° is generally considered a good crease-resistant finish.) Thus, by decreasing the amount of resin, the other physical property values would be improved. It is with this thought in mind that Figures 16 through 19 are presented. In each of these physical property figures appear curves representing 8.0% resin solids or a typical "full" wash-and-wear formulation. This was then dropped to 4.0%, holding the silicone softener constant at 0.5%, and finally dropped to 0% resin and 0.5% silicone. These large decreases in resin percentages are not meant to be given as recommendations, but are merely convenient figures to help illustrate the net effect of the silicone-addition, resin-reduction trend.

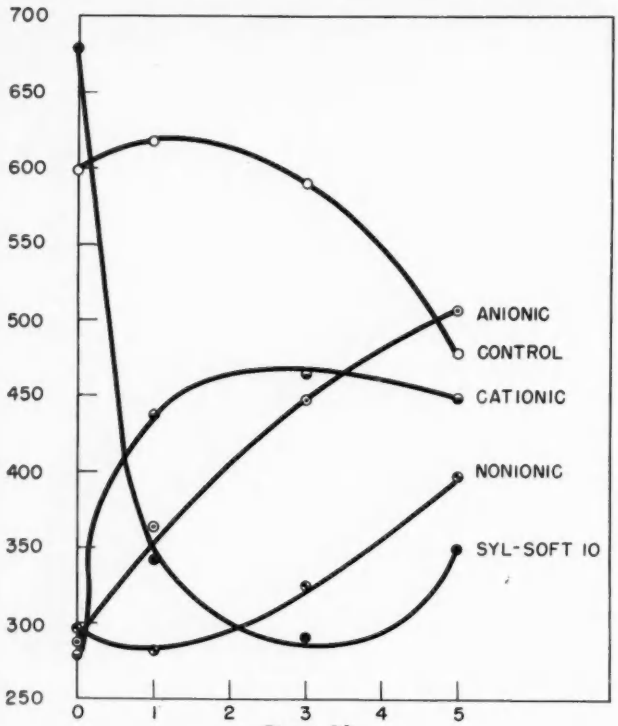


Figure 10
Plot of flex abrasion
Sum of warp & fill cycles vs no. of launderings
DMEU-melamine blend

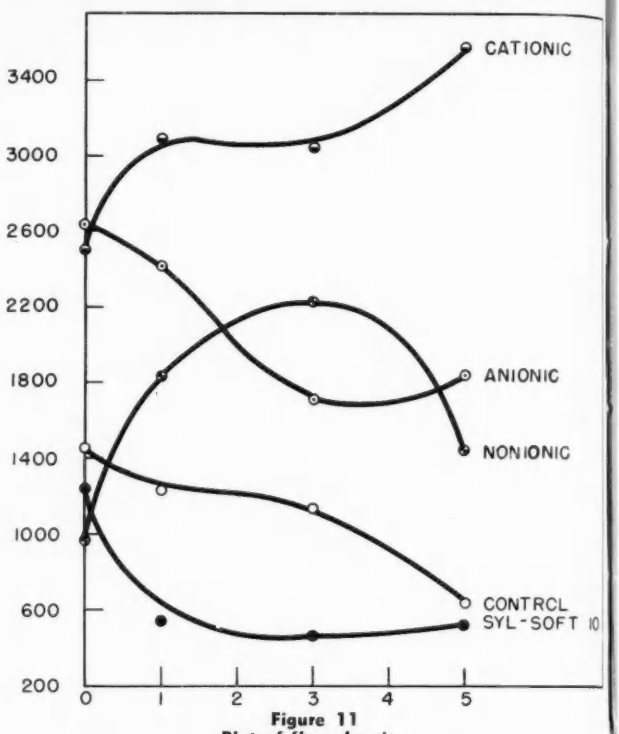


Figure 11
Plot of flex abrasion
Sum of warp & fill cycles vs no. of launderings
DMEU-acrylic blend

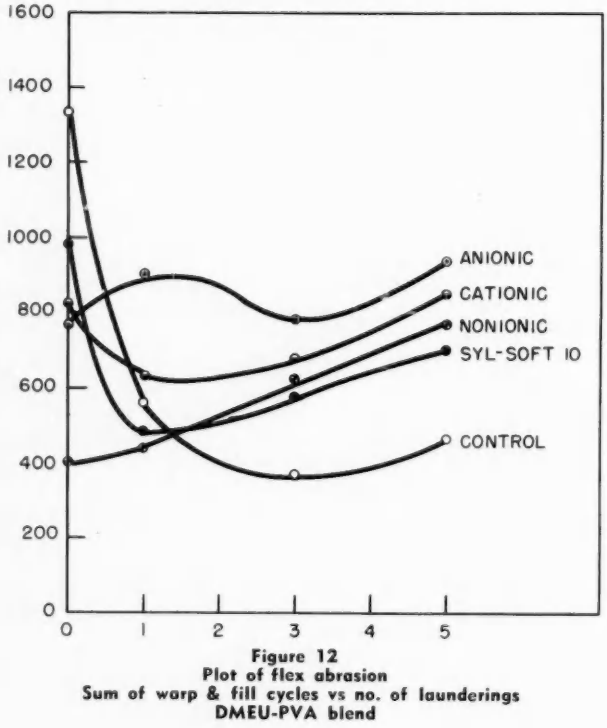


Figure 12
Plot of flex abrasion
Sum of warp & fill cycles vs no. of launderings
DMEU-PVA blend

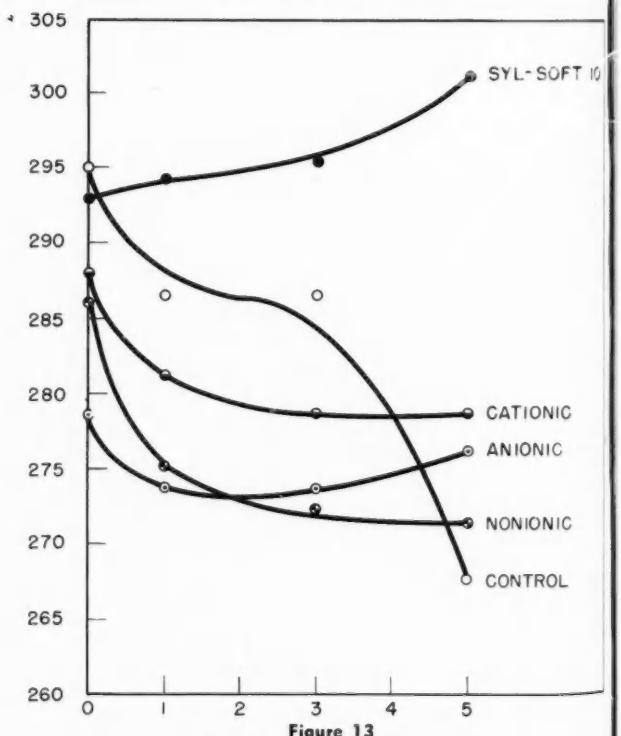


Figure 13
Plot of wrinkle-recovery angle
Sum of warp & fill values vs no. of launderings
DMEU-melamine blend

SEWING TESTS——The results of the sewing tests are presented in Table II. As would be expected, the control samples, those without any softener for lubrication, showed the highest percentage of thread cutting both before and after one launder-ing. Those samples utilizing the silicone showed less thread cutting than those samples utilizing the cationic

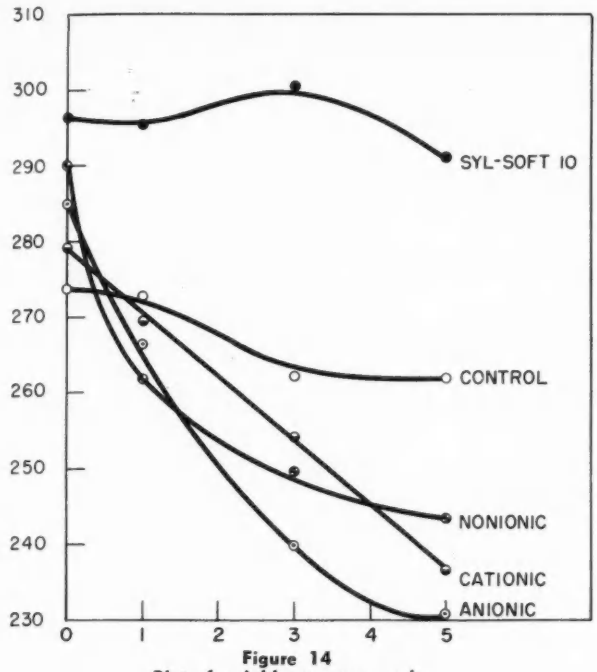


Figure 14
Plot of wrinkle-recovery angle
Sum of warp & fill values vs no. of launderings
DMEU-acrylic blend

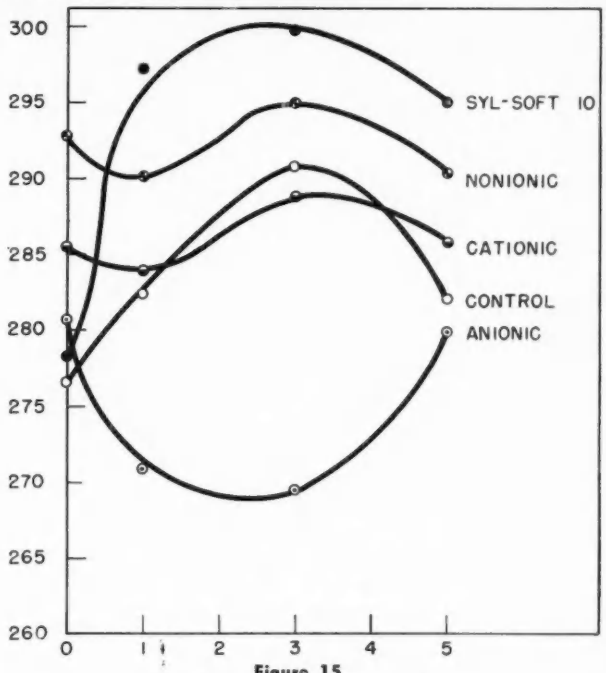


Figure 15
Plot of wrinkle-recovery angle
Sum of warp & fill values vs no. of launderings
DMEU-PVA blend

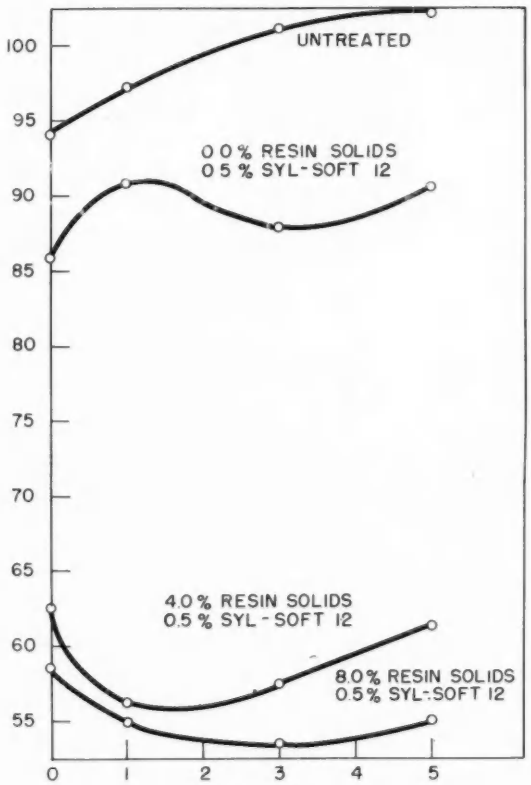


Figure 16
Plot of tensile strength
Sum of warp & fill (pounds) vs no. of launderings
DMEU-melamine blend

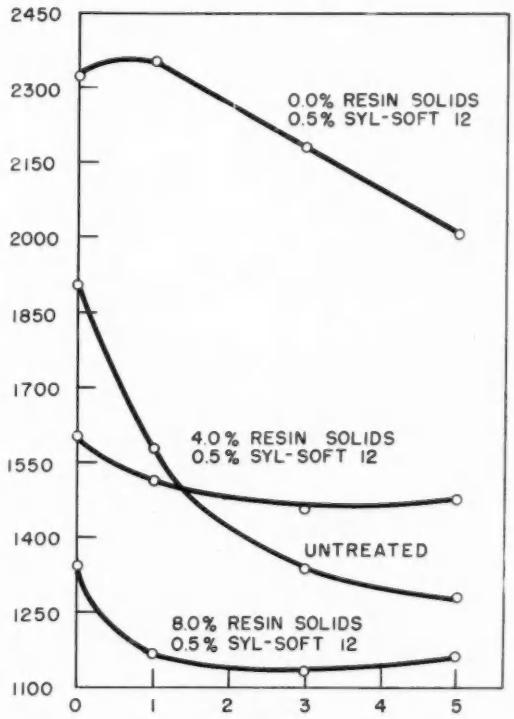


Figure 17
Plot of tear strength
Sum of warp & fill values (grams) vs no. of launderings
DMEU-melamine blend

softener. In some instances, (ie, DMEU-acrylic formulation, zero launderings, fill direction) this margin was of a rather large magnitude. In both the silicone- and the organic-softened samples, a slight increase in thread cutting was recorded after one laundering, which would be expected if the laundering removed a portion of the lubricant.

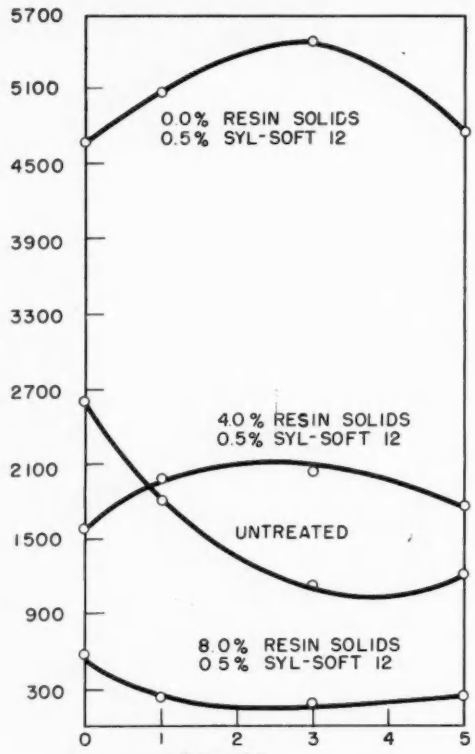


Figure 18
Plot of flex abrasion
Sum of warp & fill cycles vs no. of launderings
DMEU-melamine blend

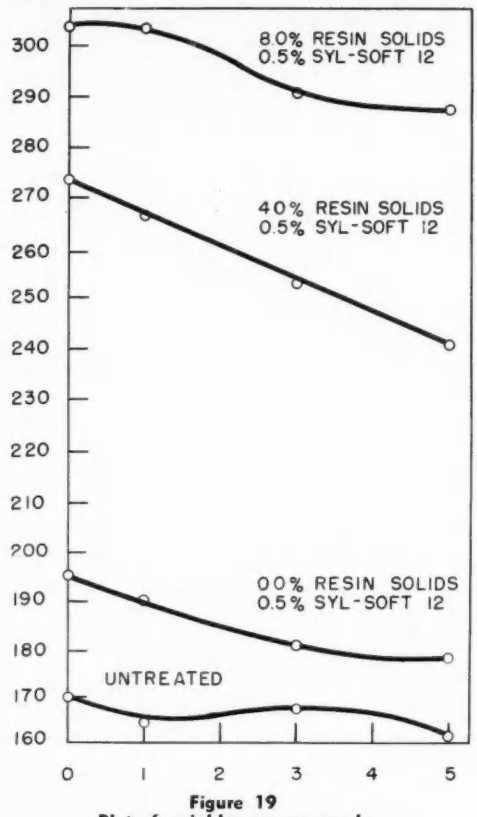


Figure 19
Plot of wrinkle-recovery angle
Sum of warp & fill vs no. of launderings
DMEU-melamine blend

TABLE II
Sewing test data

Treatment	Launderings	% Cutting fill	% Cutting warp
DMEU-melamine blend — cationic	0	31.6	1.3
" " " — cationic	1	38.8	2.5
" " " — Syl-soft 12	0	20.4	1.2
" " " — Syl-soft 12	1	25.8	1.3
" " " — control	0	47.7	4.6
" " " — control	1	43.8	2.5
DMEU-acrylic blend — cationic	0	46.3	1.3
" " " — cationic	1	33.8	2.5
" " " — Syl-soft 12	0	9.2	0.4
" " " — Syl-soft 12	1	20.4	2.5
" " " — control	0	46.3	4.0
" " " — control	1	51.7	3.3

SUMMARY

On the basis of the specific products evaluated and of the tests conducted herein, the following observations may be made:

1) The silicones are generally superior to the organic softeners in tear-strength values in all resin formulations, with the possible exception of the DMEU-PVA formulation.
2) The silicones are slightly inferior to the organic softeners in tensile-strength and flex-abrasion values in all resin formulations, with the possible exception of the DMEU-melamine blend.
3) The silicones are definitely superior to the organic softeners in wrinkle-recovery values in all resin formulations evaluated.
4) The catalyzed silicones generally give higher values and superior durability in comparison with the uncatalyzed silicones.
5) The silicone softener is superior to the organic softener as a sewing lubricant in both resin formulations evaluated.
6) Silicones make the greatest all-over improvement in the fabric's physical properties when used with the DMEU-melamine finish, and the least improvement when used with the DMEU-PVA finish.
7) Based on the increased wrinkle-recovery efficiency obtained by using silicones, the amount of resin could be decreased, still imparting acceptable wrinkle-recovery values. The reduction in resin deposition would then in turn allow the remaining physical property values to increase.

ACKNOWLEDGMENTS

The author wishes to express his sincere appreciation to those persons and companies who contributed technical information, materials and other services to this study. Special thanks are extended to Cranston Print Works Co, The Dow Chemical Co, Monsanto Chemical Co, and Rohm and Haas Co.

LITERATURE CITED

(1) Currie, C C, and Hommel, M C, *Ind Eng Chem* **42**, 2452 (1950).
(2) Federal Specifications CCC-T-191b.
(3) Hansen, W W, and Tabor, D, *Textile Research J* **27**, 300 (1957).
(4) "Proposed Voluntary End-Use Serviceability Standards," Textile Distributors Institute, Inc, New York (1956).

36th National Convention Annual Banquet—

PRESIDENT'S ADDRESS*

GEORGE O LINBERG
President, AATCC

MR chairman, honored guests, officers and members of AATCC, Ladies and Gentlemen:

I would like to compliment Ernest R Kaswell, chairman of the Boston Convention and the many committee chairmen and committee members for arranging and putting on what I consider to be an outstanding Convention program.

The AATCC has returned to the scene of its birth this year—to the City of Boston, where thirty-six years ago this month, the inaugural meeting was held. As an Association, we are young enough to be filled with the enthusiasm of youth and great things to come—and old enough to have many pleasant and treasured memories. We are also old enough to have established traditions, and when you have traditions, you have elder statesmen and people who have distinguished themselves.

Those of us who have had a hand in planning this program were of the opinion that this Convention should pay special tribute to those who by special designation have been recognized by AATCC for their achievements and their contributions to the Association. We felt that this was a fitting occasion to bring our memories up-to-date and to present some tangible evidence to those we have honored in the past, so that they may not forget our respect and affection for them.

On few occasions in the history of the Association has the Council acted under Article IV, Section 5 of the Constitution elevating a member to the rank of Honorary Member. I am referring to William H Cady, Harold C Chapin, William R Moorhouse and Albert E Sampson, who have been singled out in this way. Unfortunately, Bill Cady could not be with us tonight for personal reasons. As you know, he has received many honors—Olney Medalist, Past President, Charter Member and Honorary Member.

In first Corinthians, Chapter 3, Verse 14, it says, "If any man's work abide which he hath built thereupon, he shall receive a reward." I am sure that the greatest reward which has come to our Honorary Members is in the knowledge and satisfaction of their loyal and unselfish devotion to AATCC.

I am going to ask Bill Moorhouse, our treasurer emeritus, to come up here and allow me the privilege of presenting him with a certificate which reads as follows:

"For distinguished service to the American Association of Textile Chemists and Colorists and to the Textile Industry, William R Moorhouse was unanimously elected by the Council in 1954 an Honorary Member. Presented at the AATCC National Convention, Boston, Massachusetts, November 16, 1957. Signed—George P Paine, executive secretary; George O Linberg, president."

And now I will ask Dr Chapin and Mr Sampson to step forward.

There is another group of men in our Association who have given direction to our growth and development and who have made a lasting and indelible imprint on the AATCC. They are the past presidents who have guided the affairs of our Association over the years and have given of themselves at all times beyond the call of duty.

The certificate I am about to present to them is our salute in recognition of their wisdom, guidance and leadership. I now wish to call up the past presidents in the order of their terms of office:

Elvin H Killheffer	—1928 to 1930
P J Wood	—1931 and 1932
William H Cady	—1936 and 1937
Alban Eavenson	—1938 and 1939
Carl Z Draves	—1940 and 1941
Thomas R Smith	—1942 and 1943
Wiliam D Appel	—1944 to 1946
Henry F Herrmann	—1947 to 1949
C Norris Rabold	—1950 to 1952
J Robert Bonnar	—1953 and 1954
Raymond W Jacoby	—1955 and 1956.

This has been one of the happiest and most privileged experiences of my life.

This banquet is the one occasion each year that offers an opportunity to our members and friends to assemble in a formal gathering. It is customary for your president to highlight the state of the Association's affairs and the progress we have made over the past year. My report will be brief and I will confine it to those things I think will be of special interest to you.

Our finances are in excellent condition. I am pleased to tell you that for the fiscal year ending July 31, 1957 the Association showed a net operating gain of $18,698.03. Our assets total $527,783.71. In consultation with our auditors, Price Waterhouse and Company we have changed our method of fiscal reporting from a cash to an accrual basis in order to give you a better picture of the Association's financial situation. At the beginning of the year Mr Sampson relinquished the office of treasurer to Roland E Derby who has given much thought and attention to our finances. We are most fortunate in having him assume this important responsibility.

We have established a policy for maintaining continuous legal guidance. The distinguished Boston firm of Haussermann, Davison and Shattuck has been appointed by the Council to act as the Association's advisors.

In many ways we are endeavoring to place the Association on a more business-like basis without disturbing the voluntary spirit which is traditional in AATCC and which must be preserved and encouraged.

By putting our National Headquarters house in better order our Association has been able to take many constructive steps forward. Under the direction of George Paine our executive secretary, the staff and facilities have been reoriented to the needs of the Association in terms of support and service to the Council, officers, committees, Sections and the membership at large. Mr Paine has been insistent in his efforts to develop high standards of performance at the National Headquarters in all phases of its operations. Its activities are greatly diversified ranging from assembling laboratory data for research committees to handling the accounting records of the Association. In

*Presented at the Annual Banquet during the 36th National Convention, November 16, 1957 at the Hotel Statler, Boston, Mass.

strengthening our national offices, the executive secretary has set new channels for the flow and coordination of information, so that the officers are now able to keep in closer touch with what is happening at the national level. Our communications are being extended as we go along, and I believe that we can expect a better informed membership on the activities of the Association. I feel sure that we can look forward to an increasingly effective National Headquarters organization.

We are much indebted to the Lowell Technological Institute for the facilities which have been placed at our disposal. The Association has been invited to occupy space in a new building to be erected on the campus in the near future. This will contribute greatly to the stature of our national offce.

On October 8th, the Association entered into a new contract with the Howes Publishing Company, Inc for the issuance of the *Proceedings* and the *Technical Manual and Year Book*. Substantial benefits have been worked out for both the Howes Publishing Company, Inc and the AATCC, resulting in a happy situation for all concerned. The signing of the new contract has opened another era of harmonious and cooperative relationship between the two organizations. As you know, "Fritz" Howes was devoted to the AATCC and, from its founding, until his death, was active in furthering the Association in many constructive ways.

In September, the Committee on Colorfastness to Light announced the results of an intensive study over the past year and a half, which would give textile manufacturers much more satisfactory correlation between sunlight tests and fabric performance in actual industrial and consumer use. This new method makes available to industry a standard basis for measuring ultimate natural lightfastness of textiles before they go onto the market. It has been predicted that this will save millions of dollars annually for manufacturers, consumers and industrial users.

This year our technical and research program has produced a new tentative test which provides a more realistic method for evaluating the probable behavior of colored textiles in commercial drycleaning. Another much-needed test has come out for evaluating the durability of applied designs to drycleaning. The latter is the first test of its kind to be developed by the Association for measuring the retentive qualities of applied designs and finishes. It will be especially useful to the industry in evaluating flock and metallic prints where the effect of metallic action in cleaning with drycleaning solvents must be simulated.

Great strides have been made in the area of "wash-and-wear," and it seems likely that by the end of the year, AATCC will be able to make available test methods for measuring the appearance of "wash-and-wear" fabrics.

In the field of abrasion, there has been great progress. Rapid evaluation of the wearing qualities of men's, women's and children's apparel has reached the stage where excellent reproducibility may be obtained through the use of the AATCC Accelerotor. Inter-laboratory tests conducted earlier this year under the auspices of the Committee on Abrasion indicated that accurate data can now be obtained in a matter of a few minutes for evaluating resistance of textiles to abrasion. AATCC tests for evaluating fabrics by the weight loss method and by the edge-wear fraying method are now under development.

The problem of damage caused by retained chlorine is under study. We hope that a sound test method for predicting end-use effectiveness can be provided both for the textile manufacturer and the retail trade.

The effects of frequent laundering on work clothes dyed with fast dyes has close attention in our research program. There is a great need for more rapid testing techniques to determine colorfastness to industrial laundering and we hope to come up with some real answers.

We are sponsoring a project to explore the application of radioactive chemicals to textiles.

In this and other ways we are endeavoring to keep in tune with the times and abreast of new scientific advances as they bear on our industry.

We can be justly proud of the publication of the *Colour Index*, which has been a joint effort of the Society of Dyers and Colourists and the AATCC. This is a project of great magnitude which calls for an investment of a quarter of a million dollars by the two societies. The first two volumes are now available and the remaining two volumes will be issued within the next six months.* Our part in this great work will do much to enhance our prestige throughout the world.

I don't want to leave you with the impression that we have no troubles and no problems and that we are wearing rose-colored glasses. There is one problem in particular that troubles me and while I have you all together I want to touch on it briefly—for each of you can do something about it.

We have been hovering on a plateau of about 7000 members for the past five years. In an organization as dynamic as ours we are either going to shrink or grow. We must grow and with your help we can. We are now centered in fourteen geographical areas pinpointed in fourteen sections. Some of the larger sections have encouraged the re-grouping of their members and have brought new sections into being without suffering any long-term effects. This is one way we can grow and another way is for each member to make it a point to enlist at least one new member every six months. While we have a Membership Committee functioning at the national and section level, I like to think that all of us are on the Membership Committee. We should have 10,000 members on our rolls by the end of 1958. May I count on each and every one of you to help?

In conclusion I would like to say a word about the obligations of our Association to the advancement of science. It was the dream of the founders of AATCC to foster and encourage new ideas and inspired thinking—but even more important to provide a clearinghouse for the sharing and free exchange of scientific information.

You have seen in this Convention the results of this wisdom where the quest for knowledge has been our keynote and our purpose the unselfish giving of that knowledge.

Yet men who call themselves wise proclaim to the world their possession of secrets so devastating as to set back our civilization to the Dark Ages or even to prehistoric time. The Soviets have contemptuously broken their pledge to share in the great projects of the International Geophysical year. In the secrecy of unilateral action the Russians have released their satellites from behind a wall of scorn to create new tensions in the hearts of nations around the globe.

While our name suggests that we are an American association, our Constitution places no boundaries on our membership. Although ten percent of our members live in 47 other countries, none of them reside behind the Iron Curtain. We have no policy and no regulation which would exclude the textile scientists or technologists in any part of the world

*Volume 3 is now available.

who wish to join our ranks.

Let us in AATCC continue to prove that progress in science is not an isolated spark of genius but the combined efforts of all men for the good of all mankind.

Time does not permit me to cover the many accomplishments that have occurred over the year nor would I be able to name the many whose help and cooperation have made this progress possible. However on behalf of the Association I want to express deep appreciation to you all and for myself—sincere thanks.

On Thursday, November 3, 1921, a Boston newspaper reported that the Harvard team was leaving for Princeton that afternoon for the Saturday game. Princeton was the favorite—and won 10-3. Grantland Rice's sports column appeared on page 10 and at the bottom was Bud Fisher's "Mutt and Jeff".

Pierce-Arrow Common was selling at 14½, General Motors at 10, AT&T at 108 and American Woolen at 76.

The day before, the Convention of the National Association of Cotton Manufacturers met at the Copley Plaza. The principal speaker of the afternoon session put the blame for unemployment in this country on the depreciation of the German mark.

"The Three Musketeers" with Douglas Fairbanks would give way to Mary Pickford in "Little Lord Fauntleroy" the following Monday. "Way Down East" was in its last four days. The Ziegfield Follies was closing Saturday and Ethel Barrymore was finishing her Boston run.

Ladies shoes were advertised for $6.00 a pair and men's shoes $9.00.

Warren Harding was President.

That day Congress voted to declare November 11th Armistice Day, a national holiday.

The Navy's warship "Olympia" was at sea on her way to the Washington Navy Yard bearing the body of the Unknown Soldier. On November 3rd, destroyers were dispatched to escort the "Olympia", which was due on the following Wednesday afternoon.

The Help Wanted column carried an ad for a typist at $14.00 a week and a stenographer at $20.00. Another ad read, "Dyestuff Manufacturer is looking for first-class colorist, one who has had selling experience as well as mill experience. Must be thoroughly familiar with pre-war dyes."

The International Textile Exposition was meeting in Mechanics Hall where there appeared to be special interest in an automatic shuttle loom.

Two inches of snow had fallen in Maine—the first of the season. But it was fair in Boston, and the temperature was 50 degrees at 3 PM.

At 3 PM, Louis A Olney, chairman of the Organization Committee, called to order a meeting held in the Engineers' Club about four blocks from here. It was an event that was to alter and illuminate our time, for this was the inaugural meeting of the American Association of Textile Chemists and Colorists.

Some of you were present at that meeting and retain vivid memories of that historic day. Could you and the other founding Charter Members, by the greatest stretch of your imagination, have foreseen the day when we would be 7,000 strong and recognized around the world as the authority for test methods in the chemistry of textiles?

To you, the Charter Members, we owe a great debt of gratitude and we are here tonight to pay you tribute.

It has always been a source of great regret to me that I was not a founding member. During that early period, I was on an extended tour in the south, demonstrating the dyeing of hosiery. On my return I was asked by E H Killheffer, then my boss and later AATCC's second president, to join the newly organized society of colorists and chemists. Not being a Charter Member, I can, therefore, retain for myself the privilege of presenting each of the Charter Members with a token of our esteem. Not all the Charter Members are here tonight. Some have dropped out of the Association and we have lost track of them. Some are absent for other reasons. Those we honor tonight are still active members. I will read only the names of those present and hand each one a scroll which makes known to all the world that he was a Charter Member of the founding of the Association in 1921 and that this certificate is in testimony to his wisdom, statesmanship and loyalty.

AATCC CHARTER MEMBERS

Edwin W Adams, 65 Summit Street, Auburn, Me.

Thomas D Ainslie, Metuchen Lab, 45 Station Place, Metuchen, NJ.

Nelson Barlow, 29 Poppy Drive, Cranston 10, RI.

James L Barrington, Union Color & Chemical Co, 190 High Street, Boston 10, Mass.

Stephen W Bastow, 24 Cushing Avenue, Nashua, NH.

Boyce C Bond, P O Box 646, Ardmore, Pa.

Arthur T Brainerd, 1217 West 90th Street, Chicago 20, Ill.

Felix L Bume, Fawn Hill Road, RFD 1, Allendale, NJ.

Hibbard S Busby, 139 Bay Street, Springfield 9, Mass.

William H Cady, 127 Power Street, Providence 6, RI.

Edward S Chapin, 2 Gregory Street, Marblehead, Mass.

Harold M Chase, consultant, research and dyeing, Dan River Mills, Inc, Danville, Va.

Charles H Church, 18 Bourne Avenue, Rumford 16, RI.

Raymond B Clogston, 152 Wentworth Avenue, Lowell, Mass.

John H Culver, Jericho Manor, Jenkintown, Pa.

Ralph F Culver, 87 Weybosset Street, Providence, RI.

Harold J Daigneault, vice pres, National Aniline Div, Allied Chemical & Dye Corp, 40 Rector Street, New York 6, NY.

John N Dalton, 900 Hope Street, Providence 6, RI.

Walter C Durfee, W C Durfee Co Inc, 463 Commercial St, Boston 9, Mass.

Paul F Estey, 132 Congdon St, Providence, RI.

Duncan Ferguson, 428 Yale Avenue, New Haven, Conn.

Ralph M Fischer, 451 East 37th Street, Paterson, NJ.

Frank W Gainey, 281 Mt Vernon Street, Lawrence, Mass.

Arthur W Gates, 33 Spring Street, Willimantic, Conn.

Charles F Goldthwait, c/o School of Textiles, North Carolina State College, Raleigh, NC.

Henry D Grimes, 25 Quincy Street, Lawrence, Mass.

Arthur E Hirst, P O Box 27, Swansea, Mass.

Frank C Holden, 116-116th Ave, Largo, Fla.

John M Hood, Cooleemee, NC.

Russell W Hunt, dyer, Franklin Process Co, Hope & Clearfield Sts, Philadelphia, Pa.

John Hutton, 35 Appian Way, West Barrington, RI.

Elvin H Killheffer, RD, Jensen Beach, Fla.

Daniel P Knowland, 1111 Orchard Avenue, St Joseph, Mich.

M J Lane, 2 Williams St, Andover, Mass.

Harold W Leitch, 11 Johnson Road, Andover, Mass.

Leonard S Little, textile consultant, 101 West 31st Street, Room 1500, New York 1, NY.

Frank L McCool, 17 Riverside Drive, Barrington, RI.

Carl E Medde, 11 Kilburn Avenue, Saylesville, RI.

Edwin S Millspaugh, plant mgr, Humboldt Dye Works, Inc, 854 Humboldt St, Brooklyn 22, NY.

Eric J Monaghan, RFD 1, Cresco, Pa.

William R Moorhouse, PO Box 352, South Yarmouth, Mass.

Alex Morrison, 5 Canterbury St, Andover, Mass.

Herbert S Morrow, 1080 Oakland Ave, Plainfield, NJ.

Wallace J Murray, research chemist, Arthur D Little, Inc, 30 Memorial Drive, Cambridge 42, Mass.

Carroll W Peck, pres & treas, George Mann & Co Inc, 251 Fox Point Blvd, Providence, RI.

Tom Peel, Box 402, Brookneal, Va.

Alfred Pfister, pres, Pfister Chemical Works, Inc, Ridgefield, NJ.

Walker F Prescott, Prescott & Co, 2209 Hingston Avenue, Montreal 28, PQ, Canada

Leverett N Putnam, 71 Lowell St, Andover, Mass.

Albert E Sampson, 9 Thorndike Street, Beverly, Mass.

Charles F Schaumann, 804 Berkeley Road, Wilmington 6, Del.

Herbert F Schwarz, 10 Brunswick Ave, Saylesville, RI.

Walter M Scott, assistant director, utilization research, USDA, Washington 25, DC.

R Norris Shreve, Eng Adm Bldg, Purdue Univ, Lafayette, Ind.

Leon W Sidebottom, 490 Brook Road, Milton 87, Mass.

Robert R Sleeper, 11 Fernald Ave, Haverhill, Mass.

Russell C Smith, vice pres & general manager, Cranston Print Works Co, Cranston, RI.

John J Sokolinski, 884 East 39th Street, Brooklyn 10, NY.

William Stoehrer, 144 Arlington Street, Haverhill, Mass.

Harold B Sturtevant, 6 River Rd, Saylesville, RI.

Percival Theel, Philadelphia Textile Institute, Schoolhouse Lane and Henry Ave, Philadelphia 44, Pa.

P J Wood, technical director, Royce Chemical Co, Carlton Hill, NJ.

Address of the 1957 Olney Medalist———

THE PURSUIT OF HAPPINESS

P J WOOD
Technical Director
Royce Chemical Company
Carlton Hill, NJ

THOMAS CARLYLYE, philosopher, essayist, and historian of the French Revolution, made the statement that biography answers two questions—What effect had society on the man, and what effect had the man on society?

As far as the present Medalist is concerned, Milton Harris has, at least partly, answered the latter question, in his own inimitable way.

A partial answer to the other part of the question may be discernible in this dissertation on one of the three items promised to all citizens of the United States, as set forth in detail in the constitution and the bill of rights, life, liberty and the pursuit of happiness.

Mark you, those wise founding fathers did not say "life, liberty and happiness," which is something else again. With their astute wisdom they introduced that clever expression "the pursuit of happiness"—(there was a lawyer on the committee, remember?).

How many times have we heard someone exclaim "If I only had a million dollars!" As if a million dollars were all that stood between them and perfect happiness. Money is one of the most greatly over-rated commodities in the world. No less an authority than the *Wall Street Journal*, of all papers, once said "Money is an article which may be used as a universal passport to everywhere except Heaven, and as a universal provider of everything except happiness."

So, money is not the answer. What is the answer?

Isn't it possibly the enjoyment of those things the value of which cannot be expressed in terms of money, the *ability to enjoy* those things?

Is it a matter of the experiences we have gone through in life's journey?

Is it a matter of the friends we have made during our life's span?

What value could one possibly put on a gloriously colored eastern sky at sunrise, the gorgeous panorama of brilliant autumn foliage in the Berkshire Valley, the Mohawk Trail and the Eastern Shoreline?

How shall we compute the worth of a friend, especially that of a friend who can share our happiness in these things beyond price, these treasures of the spirit?

Happy are they who enjoy the friendship of those with whom they are associated in business. This can be an important factor in the successful pursuit of happiness, and it doesn't do the business one bit of harm, either. A O Battista, in his recent book, says "Work doesn't hurt anyone; only *work with the brakes on.*" The brakes are never on, where cheerful, friendly cooperation prevails.

Looking back through the history of the world it is strikingly evident that there never was a time when so many interesting events have taken place in so short a period.

If this circumstance makes any contribution toward the pursuit of happiness, then the people who were fortunate enough to be born and to live in this era should be happy indeed.

Since 1880, these people will remember the invention of the electric light to take the place of city gas, which always had its dangerous features, although it is still largely used for heating.

A very few of the people present here today may remember the old horse car in New York, later replaced by the electric street car, which, in its turn, gave way to the electric bus in some cities, now almost entirely ousted in favor of the more mobile gasoline bus.

The antique railroad engine of the "Rocket" type of our grandfathers' days is now a museum curiosity. When I first went to Paterson, NJ, the locomotive works of that city were shipping one locomotive per day from the Rogers and American Locomotive Works. More power for longer freight trains pulling heavier pay-loads demanded more powerful engines. The Diesel engine consuming the lowest type of fuel oil was the answer. Many roads have been electrified thus eliminating the necessity of carrying fuel for traction.

Still fewer people will remember the old horse and buggy days, happy days, when one-arm driving was in flower. In 1911, when this speaker started driving an automobile, horses were still in the majority. It was a common experience to have to come to a stop until some frightened horse was led past the automobile. Now the horse has practically disappeared.

The development that has taken place in aeronautics has been miraculous. And yet there are those who cannot remember when there were no airplanes.

This hurried survey of some of the things that have happened in the years past will serve to show that the world has been interesting enough to keep anyone occupied, and being occupied is part of being happy. There is no greater misery than having nothing to do.

These are the material matters in the world that make for happiness.

But let us give a thought to the personal side of life, our friends and acquaintances, those with whom we come in daily contact.

The very name of this award, with which I have been honored, brings to my mind, as it must to yours, two of the men in whose friendship I found much happiness. The first is Alfred P "Fritz" Howes, who generously made the award possible for all time by instituting it and providing the endowment to carry it from year to year. I think it is characteristic of Fritz that he called it not by his own name. He gave it the name of his friend and our friend, Dr Louis Atwell Olney, our respected and beloved founder.

Fritz was one of those fellows who could not do too much for a friend. Nothing was too much trouble for him, if it gave others pleasure. He

was a hard worker and the Association owes much to him for the publicity it received in those early days when it needed it most.

The second is Dr Olney himself, a friend among friends. He was the leader of the Association during the first 6 years of its existence and he well and truly laid the foundation for its subsequent phenomenal growth. His story is that of a life devoted to the service of his country, to a large and important industry, and to his fellow man.

His foresight, his energy, his leadership, and above all, his tact and unfailing courtesy, endeared him to students and membership of the Association alike, commanding universal respect and willing cooperation.

It is a source of satisfaction to the friends of the late Louis A Olney that they gave substantial recognition to his accomplishments during his lifetime on frequent occasions.

The Olney Medal, endowed by the Howes Publishing Co, Inc, was presented to Dr Olney in 1944. It was meet and right that he should receive the first award. As he relinquished the office of president of the Association, he was made a life member of the Association and later he was honored with the title of President Emeritus.

His alma mater, Lehigh University, in 1926, conferred on him the honorary degree of Sc D.

At the Silver Anniversary meeting of the Association in Boston, an oil painting of Dr Olney was presented to Lowell Textile Institute.

"These were honored in their generations, And were the Glory of the Times."
(Ecclesiasticus XLIV 7)

The other day, as I was browsing through a new anthology recently published by the *Reader's Digest*, I came across an article entitled "I am an Optimist" by Andre Maurois.

Someone has defined a pessimist as a man who wears both belt and suspenders. I wear neither. So I presume I may also qualify as an optimist.

In this article, Maurois gives the credit for his optimism to a happy childhood, describing his parents as the finest a boy could have, their treatment of him as a child having engendered in him a confidence in human nature that he might otherwise not have had.

Happy family relationships have a lot to do with the attainment of success in that everlasting quest, the pursuit of happiness.

If we have the aid and approval of those near and dear to us, no task seems insuperable, no assignment is too difficult.

Like Mr Maurois, I have been blessed in my friends and relations, and, in conclusion, I would like to read to you parts of two letters from members of my family who have heartened and encouraged me throughout my life.

From my brother, "I am also of your opinion—It is today that counts. Einstein (I believe) holds that time is an illusion due to the limitation of the senses and that, in some way, past, present and future are one. Wasn't it Paul of Tarsus who, without wandering into the realms of metaphysical speculation, summed it up in four words 'Do the next thing.' May we have strength to do it."

From my father, "I wish you good health and everything you may wish to attain to, so that it be for your good and well being, and that at the end of the year, please God, you may be able to say, considering all things you have passed through, this has been the happiest year of my life and so go on from year to year adding to your joys by the service you can render and not least in promoting peace and good will in every department of life and seeking the welfare of others who need another's help and sympathy—not necessarily always in material things but in showing consideration and friendliness, in a sense of brotherhood without spelling it with a large B—when we can arrive at this—there will be no room for the class war which our extreme socialists are preaching but we shall be approaching the end which our Lord and Saviour desired—that we may all be one."

NOTICE TO SECTION OFFICIALS

To ensure that the activities of your Section receive proper publicity in the *Proceedings*, it is desirable that material be submitted direct to American Dyestuff Reporter, 44 E 23rd St, New York 10, N Y.

ADVANCE NOTICES OF MEETINGS———**Copy must be submitted *at least two weeks* prior to the publication date. ADR is published on alternate Mondays. It is urged that these dates be taken into consideration when copy is submitted.**

Advance notices should include the date and site of the meeting; the speaker's name, position, business affiliation, and subject; a short abstract of the paper (optional); details of additional meeting highlights, eg, nominations or election of officers, special awards, activities of Sectional committees, etc.

MEETING REPORTS———**Complete reports should be submitted as soon as practical after a meeting. Information should include attendance figures; captioned photographs of meeting principals (speaker, section officials, etc); and any additional points not covered in the advance notice. An extensive resume of the speakers' remarks is not necessary if the paper is to be submitted for full publication in the *Proceedings*.**

PAPERS———**Two copies of each paper presented before local sections should be sent to the offices of the American Dyestuff Reporter. It is very important that every speaker be acquainted with the "Notice to Authors", which appears periodically in the *Proceedings*. Additional copies of said notice will be sent to section officials on request.**

It is imperative that each Section appoint an official whose responsibility it is to see that the speaker's remarks are submitted. In cases where prepared manuscripts are not immediately available to the Section official, it may be necessary to acquaint the author with the address to which he should send his material when it is finally prepared.

In cases where the material is extemporaneous (panel discussions, question-and-answer periods, open forum, etc) it is the responsibility of the Section to provide for stenotype service, so that a complete record may be available.

PRESENTATION OF A PAPER BEFORE A LOCAL SECTION DOES NOT GUARANTEE PUBLICATION IN THE PROCEEDINGS, AS THE FINAL DECISION RESTS WITH THE AATCC PUBLICATIONS COMMITTEE. However, most papers will be acceptable provided they conform in content and layout to established practices of AATCC.

ACTIVITIES OF THE LOCAL SECTIONS

Rhode Island

THE Rhode Island Section, at its annual meeting on Dec 5, elected the following slate of officers:

Chairman—Thorwald Larson, Carbic Color & Chemical Co, Inc

Vice chairman—Robert H Phillips, Cranston Print Works Co

Secretary—Harrison M Gorton Jr, American Aniline Products, Inc

Councilor (new)—Remus F Caroselli, Owens-Corning Fiberglas Corp

Sectional Committee—Theodore S Clarke, E I du Pont de Nemours & Co, Inc; Everett W Counsell, Interchemical Corp; Ernest Yeadon, Bradford Dyeing Assoc; Kenneth J Broden, Sherwin-Williams Co.

New York

THE New York Section held its final meeting of the 1957 season on December 6th at the Sheraton McAlpin Hotel, New York, NY.

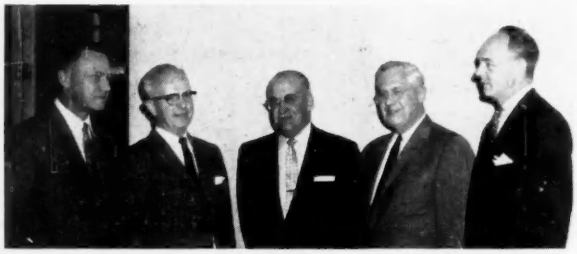
The election of the following officers for 1958 was announced: *Chairman*—Donald E Marnon, Berkshire Color & Chemical Co; *Vice chairman*—John A Komninos, Waldrich Co; *Secretary*—Richard P Monsaert Jr, Puritan Piece Dye Works; *Treasurer*—Richard E Miller, Eastman Chemical Products Inc; *Councilors*—Paul J Luck, Ciba Co, Inc; B F Quigley, E I du Pont de Nemours & Co, Inc; Donald E Marnon and Richard P Monsaert.

Guests at the head table included Raymond W Jacoby, chairman of the Perkin Centennial Committee; P J Wood, 1957 Olney Medalist; and Harold W Stiegler, AATCC director of research. John A Komninos, vice chairman, presided in the absence of Chairman Donald E Marnon.

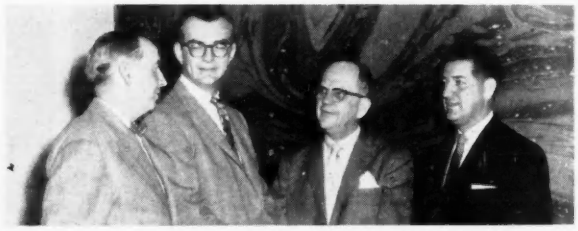
Carl Brubaker, research director, Standard Bleachery & Printing Co, presented the Section's 1957 Intersectional Contest entry, "Identification of Dyestuff Classes on Natural and Synthetic Fibers," which was awarded second prize at the Boston Convention in November.

This was the last meeting of the Section under the name "New York Section." The "Metropolitan Section" will next meet on February 7th.

MID-WEST SECTION MEETING • OCTOBER 26, 1957 • BISMARCK HOTEL, CHICAGO, ILL



Jack G Kelley, chairman, Mid-West Section; Elliott Morrill, vice president, AATCC; George O Linberg, president, AATCC; Charles W Dorn, chairman, Executive Committee on Research; George P Paine, executive secretary, AATCC



R L Berryman, supt of textiles, Illinois State Penitentiary; James F Whalen, Becco; J R Bentert, textile development engineer, Sears, Roebuck & Co; J H Jones, Phoenix Dye Works

R S Blank, E L Miller (standing), L Blank, A A Gorski, F J Connelly, A R Breen, F J Acker (standing), J Loerch

W H Sites, L W Hansen, R G Carr (standing), D A Anderson, W Boyd Jr (standing), H Calvent, L Hoehn Jr, J C Picken

A Fischler, T Heginbotham, A E Patton, A T Brainerd, R B Lueg, R R Waski (standing), W H Bultman, G B Chabot Jr, J L McGowan, K M Harms (in front)

Seated: B Fay, J Triska, F H Gurry, A J Olson, C W Seitz Standing: J G Templeton, E I Stearns, B Isenogle

WESTERN NEW ENGLAND SECTION

•

Meeting of Sept 27, 1957

•

Rapp's Restaurant
Shelton, Conn

(Photos courtesy of A N Henschel, Warwick Chemical Co)

E I Birnbaum, Hart Products Co of Canada, guest speaker

Thomas J Gillick Jr, WNE chairman; E I Birnbaum; John J Cervini, supt, Cheney Bros

E I Birnbaum and J J Cervini

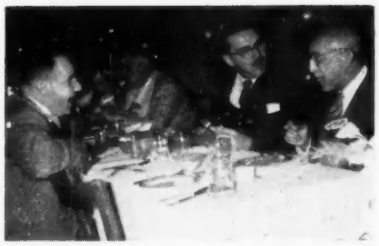
Richard Komoski, Joseph Black and Nitold Kocay, Am Cyanamid

T J Gillick, WNE chairman, and Raymond J Carey, WNE Councilor, talking over Sectional business

Peter DuBiel, WNE treasurer; J Edward Lynn, national technical program chairman, and WNE Chairman Tom Gillick

Treasurer DuBiel checks reservations

Charlie Cashin, Mason Silk; Herb DeMarco, Shelton Hosiery; Russ Roberts, Mason Silk



Al Marquis, Royce Chemical; Ray Carey, GAF; Al Gammons and Oscar Edelstein, Pond Lily Co

Paul Reeves, Larry O'Connell, Frank Broadhead, Gary Thomas and Jim Bowes, Princeton Knitting Mills; Alan J Rooney, Geigy

Milton Greene, Hart Products; Rudy Geering, Princeton Knitting Mills, WNE Councilor; Abe Endler, Hart Products; H W Doyle, Darworth Inc; Peter DuBiel; Emil Bronke, Cheney Bros; Norm Brunelle, PKM; Timothy J Horan, PKM

Edvard Young, consultant; Andrew W Goodwin, PKM, WNE secretary; G Alan Dickson, Arnold, Hoffman & Co, Inc; Socrates Vaniotis, National Aniline Div, Allied Chemical & Dye Corp

FALL OUTING

Pacific Southwest Section

●

Ojai Valley Inn, Ojai, Calif.
October 25, 1957

(Photos courtesy of A H Roberts, Jacques Wolf & Co)

The National Headquarters Office
of the Association
Will Accept Until Further Notice
PREPAID IN FULL SUBSCRIPTIONS
for
THE SECOND EDITION
of
THE COLOUR INDEX
IN FOUR VOLUMES
published by
The Society of Dyers and Colourists
and
The American Association of Textile Chemists
and Colorists
at
$112.00 The Set Delivered

Volumes 1, 2 and 3 now available for delivery on prepaid orders.

Volume 4 in process of publication. Shipment will be made when ready.

BEING A LIMITED EDITION THE PROMPT PLACEMENT OF ORDERS THEREFOR IS SUGGESTED. WRITE TO:

American Association of Textile Chemists and Colorists
Box 28, Lowell, Massachusetts

APRN ADDENDUM

THE following material, designed for the Annual Processing Review Number (December 2nd issue) was received too late for inclusion in the Alphabetical List of New Products Developed Since November, 1956.

The properties claimed for these products are those claimed by the manufacturer.

The products are those of the following manufacturers: Crest Chemical Corporation, 225-235 Emmet St, Newark, NJ (Crest); Francolor Inc, Division of Compagnie Francaise des Matieres Colorantes, Rhode Island Hospital Trust Bldg, Woonsocket, RI (Francolor); and Soluol Chemical Co Inc, Green Hill and Market Streets, Natick, RI (Soluol).

ACID ALIZARINE SAPPHIRE SS
(Francolor)

This new addition to the Company's acid alizarine types of dyestuff is used for the dyeing of wool with very good quality by practically all methods known for the dyeing of wool. This color yields very bright blues on wool and is also distinguished by its good fastness to light (5 to 6 in a light shade). Although being quite similar but a bit lighter than the sapphires listed in the Company's No. 8-ED Shade Card, this color possesses outstanding fastness to perspiration, which would make it an interesting color for the dyeing of baby blues, or in combination with other acid colors for ladies' wear. This color may be used with Acid Light Yellow 5R and Azonaphthol Red JL to obtain very good shades of brown on wool piece goods. The fastness to milling in an alkaline state is also very interesting.

ACID BRILLIANT CYANINE BLUE BLI
(Francolor)

An acid color which is used for the obtaining of very bright blue shades of very good fastness to light. It is applicable to nylon, wool, and silk. It is very interesting for the printing of silk in order to obtain bright royal navy blues with outstanding general fastness properties. It not only is good as a self shade, but also as a shading color in order to brighten baby blues or for the printing of neutral shades of grey.

CHROME FAST ORANGE RL
(Francolor)

An outstanding additive to the Company's Chrome Fast color range. This dyestuff produces very fast-to-light shades on wool piece goods and is also interesting for the Vigoureux printing of wool. A chrome color, it is suitable, not only in its self shades, but also when combined with such colors as Chrome Fast Grey JL (Pr 299) and Chrome Fast Red NL. It has outstanding leveling properties and therefore, may be used for piece dyeing. This color also possesses very good cross-dyeing properties.

CHROME FAST RED NL
(Francolor)

A chrome color to be used for the dyeing of wool by the top chrome or metachrome method. The principal characteristics of this color, a new addition to the Company's chrome color range, is its outstanding general fastness. It has a much bluer and more pleasing shade than current Chrome Fast Red 2JL and J types. Because of its good stability and very level dyeing properties, it is applicable to worsted yarn by package dyeing methods and also for many types of machine methods of dyeing. It also has good affinity for silk and, because of its very good fastness to light (5-6 in a pale shade), it may be of very interesting use for obtaining pink shades.

CRESTDRI
(Crest)

A one piece water-repellent for fabrics consisting of cotton, viscose rayon, acetate rayon, nylon and blends. The emulsion is said to be extremely stable, easy to apply, and to give spray ratings of 90-100 on the AATCC Spray Tester.

CRESTEX BLU-TERGE
(Crest)

A highly concentrated surfactant containing optical bleaching agents. It is recommended by the manufacturers primarily for processing rayons, cottons, acetates etc, for both hydrophobic and hydrophilic fibers. Blu-Terge yields an improved white and overcomes the slight yellowish cast sometimes present. This product is a viscous liquid having a clean blue color and a pH of 8-9 in solution.

CRESTEX DPA
(Crest)

An antifoaming agent claimed to eliminate foam with exceptional rapidity. This product, available in emulsion form, is said to be extremely effective in small quantities, to have wide application, and can be used wherever there is foam in aqueous medium. It is economical, with no evaporation, and can be used over the entire pH range. This product, it is claimed, in very small quantities completely eliminates foam in such operations as dyeing, scouring, kier boiling, package yarn dyeing, printing and finishing.

CRESTEX DYESET
(Crest)

An aftertreating agent said to impart the same fastness to selected direct dyes on rayons and cottons that are obtained with more expensive dyestuffs. Crestex Dyeset is a water-white liquid which chemically is a substantive complex cationic resin. This product is used for eliminating bleeding and staining of prints during wet handling and wet processing, improving the wash-resistance of cotton and rayon, eliminating the staining of discharge prints when the ground has been dyed with a direct color, and for use in dyeings or prints when applying various resin finishes from warm baths.

CRESTEX DYSIST
(Crest)

A cation-active synthetic surfactant possessing cleansing, wetting, dispersing and level-dyeing properties. This product is chemically a substituted fatty amino polyethylene ether derivative. Dysist is recommended primarily as a dyeing assistant for dispersing cation-active dyestuffs which are used in the dyeing of Orlon.

CRESTEX SOFTENER D
(Crest)

Anionic, nonsubstantive white paste softener absolutely stable to light and time and cannot discolor or develop an odor. This product is recommended as a binder and softener in the Tubetex finishing of cotton and rayon knit goods as well as a softener in the short bath finishing of woven goods. Softener D is also used to provide a luster to acetate and acetate mixtures.

CRESTKELATE
(Crest)

A liquid organic complexing agent of the polyamino carboxylic type. It is said to inactivate heavy metal and alkaline earth ions without removing them from solution and to enhance the cleaning action of soaps and synthetic detergents. Crestkelate prevents or inhibits the deleterious effects of these ions, ie, calcium, magnesium, copper, iron, etc, in the many operations involving water where traces of these metals are harmful. This product is said to stabilize peroxide and chlorite bleaching solutions and to dissolve insoluble soap and other deposits.

CRESTOBOND
(Crest)

A viscous gum which imparts to piece goods a heavy stiff hand and a weighted finish. This product dries to a stable invisible film and can, accordingly, be used on all goods with no danger of delustering or change of shade. Crestobond is used with urea weighters in the finishing of knit goods to minimize the curling characteristics of the fabric. This material is readily soluble in cold water and is compatible with glues, starches, sulfonated oils, and other finishing agents.

CRESTOGEL
(Crest)

An alkylsulfonate which is said to be a powerful all-purpose surfactant unaffected by acids, alkalies, or hard water. Crestogel is used as a scouring and dyeing assistant in jigs, dye becks, etc. It is recommended for soaping prints, scouring all types of textiles, as a leveling agent in dyeing, and for eliminating scum formation.

CRESTODULL
(Crest)

A new type of delustering agent for rayon, acetate and rayon acetate mixtures which contains in addition to delustering pigments a binding agent. This agent is said to give better adhesion to the fabric and prevents the dusting out of the pigments. Crestodull imparts a full, soft hand to the treated fabric. This product disperses readily in hot water, yielding suspensions of excellent stability.

CRESTOLAN
(Crest)

A new type nonionic surfactant for use in the scouring and processing of wool, rayon, cotton, nylon, Orlon, Dacron and Acrilan. This product is said to combine the powerful detergency of soap and the excellent wetting, chemical stability and hard-water resistance of nonionic ethers. It is recommended for improved kier boiling, faster desizing, increased absorbency, more efficient bleaching, and improved sweater and knitwear scouring and dyeing. Crestolan is claimed not to cloud in a boiling bath, so that optimum detergency is obtained at all temperatures. It is stable to strong acids and alkalies, displays exceptional wetting efficiency particularly in alkaline solutions, and rinses completely free from all fibers.

CRESTOPEN CONC
(Crest)

A wetting-out, leveling and dyeing assistant recommended by the manufacturer for use as a general all-purpose wetting and rewetting agent. It is used as an assistant for vat or pad dyeing, for package dyeing, in dyeing operations in general to give greater uniformity of shade. Crestopen Conc finds use in wetting-out tubular knit goods in order to sink them prior to the boil-off, as a dispersing agent in the dissolving of dyestuffs in order

to give complete solubility and full color value and for wetting-out in desizing rayon and cotton piece goods.

CRESTOPENE 5X
(Crest)

A sulfonated ester condensation product said to possess excellent wetting and re-wetting properties. This liquid anionic surfactant is said to be outstanding in performance in both hot and cold liquors, and stable in hard and soft water. As a wetting agent, Crestopene 5X can be used in such applications as padding, sizing and desizing, bleaching, raw stock processing, package and beam dyeing. As a rewetting agent it can be applied in the treatment of fibers prior to dyeing and printing, and in the shrinkage operation.

CRESTOPERM HP CONC
(Crest)

A modified urea-formaldehyde resin in concentrated form used for shrinkproofing of spun rayon, cotton and synthetics. It is claimed that Crestoperm is used also to obtain special bodied hands of excellent durability for reducing slippage, for binding pigments, for processing durable glazed chintz, and for modifying the hand obtained with paste resins. Crestoperm is a clear water-white viscous liquid possessing long storage life and complete miscibility with water.

CRESTO-RESIN RB
(Crest)

A clear water-white resin that provides a wide range of interesting hands on synthetics, especially acetates. Chemically, this resin is a modified glyceryl phthalatic resin in 50% strength. It is recommended for finishing foulards, jacquards, ninons, satins and especially for ribbon material of acetate, rayon or mixed composition. This product locks the fiber and prevents unravelling upon cutting of the ribbon fiber.

CRESTOSET
(Crest)

A water-soluble resin in viscous liquid form. Highly recommended by the manufacturers for producing a nonslip finish on acetates, rayons and mixtures. In addition to the antislip finish, this product is said to impart a thick, full-bodied, weighted hand without undue harshness. Crestoset, it is claimed by the manufacturer, causes no rancidity, no deterioration on aging, and no discoloration on drying. This product is compatible and can be used with the other finishing agents commonly used with antislip agents.

CRESTOSOFT CQS
(Crest)

Cationic, substantive pure white paste which is said to be a remarkably versatile product showing excellent softening properties on cotton, rayon, nylon, Orlon and Dacron. Crestosoft CQS produces a full, lofty hand and shows no alteration of shade or yellowing of whites. It finds ready application as a softener in resin finishes.

CRESTOSOFT RF
(Crest)

Nonionic, low-foaming softening agent which is said to assure a soft lofty hand with maximum draping qualities for all types of cotton, rayon, acetate, Bemberg and woolen fabrics. Used on whites with no yellowing and particularly on colored goods since it will not affect the color or light fastness of dyed goods or prints. Recommended also for use with urea-formaldehyde, melamine, and cyclic urea resins to soften the handle.

CREST RETARD NM
(Crest)

Retarding agent for the level application of cationic dyes on whiter, more dyeable Orlon. This agent is said to prevent the rapid exhaustion of dyestuffs above 200°F. By varying the amount of Crest Retard, it is possible to vary the time required to exhaust the dyestuff over a broad range. The amounts required depend upon the depth of shade wanted, the percent dyestuff used, and the desired time of dyeing.

DIAZOL FAST BLACK JRA DOUBLE & J DOUBLE 50
(Francolor)

Two new additions to the Company's Diazol Fast color line which would be interesting for the obtaining of good shades of black on cellulosic fibers. The Diazol Fast Black JRA Double has the added feature of not bronzing on viscose material. Both colors are dischargeable and reserve acetate. A slight after-treatment with Fixogene TN Extra Liquid improves the wetfastness of these colors from very good to excellent.

DIAZOL LIGHT PINK 2J
(Francolor)

A new addition to the Company's Diazol light or fast-to-light direct dyes. It is very interesting for its good fastness to light and its excellent dischargeable qualities. The solubility of this color would permit it to be used for machine or package dyeing. The wet treatment of this color may be improved by the use of Fixogene TN Extra Liquid. It may be used to obtain medium and bright shades of pink while still giving neutral shades of pink on all cellulosic fibers. It is also interesting by virtue of its affinity for silk.

HELIANE SCARLET J2N OPTIMA PASTE
(Francolor)

A recent addition to the Company's Optima Paste line to be used for the printing of cellulosic fibers. This color produces very bright shades of scarlet on cotton piece goods with very good lightfastness. It also possesses excellent fastness to strong washing and chlorine, as well as peroxide.

INOCHROME BLACK BNI EXTRA
(Francolor)

This Inochrome premetalized type of dyestuff is especially interesting for printing on wool or on nylon. It also gives excellent results when used for Vigoureux printing. It possesses excellent fastness to light, perfect leveling and solubility.

NEUTRICHROME GREY 6BL
(Francolor)

Another new addition to the Company's Neutrichrome premetallized color range. It has excellent fastness to light and outstanding leveling properties. When combined with Neutrichrome Violet B, neutral shades of pearl grey and lively shades of navy are obtained. This type is applicable to wool, nylon and silk for the various methods now used.

NEUTRICHROME VIOLET B
(Francolor)

An outstanding addition to the Company's Neutrichrome premetalized color range. It is used to obtain bright shades of violet, as well as beautiful shades of pearl grey and navy blue when combined with Neutrichrome Grey 6BL. Because of its fastness and leveling properties, it is very good for all phases of wool, nylon or silk dyeing.

NEUTROGENE BLACK B
(Francolor)

The latest development in the Company's Neutrogene range (neutral aging azoic colors) is Neutrogene Black B. This color may be used with ordinary Neutrogene colors, as well as with Neutrogene VA and Neutrosel-Naphtol combinations. It may be used by itself as well as in combination with solubilized vat colors, such as Solasols, with vat colors, and even with fiber-reactive dyes. Neutrogene Black has, over and above the characteristics of the Neutrogenes and Neutrogene VA properties, the very long stability which is not common with the general types of azoic blacks.

NEUTROGENE LIGHT NAVY BLUE B
(Francolor)

A new addition to the navy blue range of Neutrogenes. It is a neutral navy, less red than other types manufactured up to this time. It is destined to printing on cellulosic fibers and neutral aged.

SOLANTHRENE BRILLIANT ORANGE JR NEOPOWDER
(Francolor)

A new addition to the Company's vat color dyeing range for cellulosic fibers. It is characterized by good qualities in running properties, as well as brightness and general fastness. It may be used for piece dyeing, as well as package or beams.

SOLANTHRENE GREY 4B SUPERFINE PASTE
(Francolor)

An original grey with very good all-around fastness and interesting properties for continuous dyeing of cellulosic fibers. It possesses the qualities of the Superfine Pastes types of Solanthrenes, which means redox-potential control and regularity of size of the dye particles.

SOLUSOFT
(Soluol)

Durable, silicone-bearing, nonionic softener for use in resin-finishing, or where a high-temperature resistant finish is desired. Solusoft is self-curing and requires no catalyst. It imparts a soft hand to the fabric, giving excellent needle lubrication, as well as resistance to removal by laundering. Highly effective in wash-and-wear finishes on cottons, yielding desirable tear-strength and crease-angle recovery values, as well as softness and hand. Solusoft is nonyellowing, and has no chlorine retention characteristics.

SULFANOSOL PRINTING BLACK 2R
(Francolor)

This is a solubilized sulfur black for printing which is thoroughly soluble in water and has practically no adverse effect on the printing rollers. It presents the following advantages:

1) excellent leveling color,
2) very good stability of the print paste,
3) possibility of being printed last and also having the outstanding quality of fastness.

SUPER CREST ORLON SOFTENER CQ
(Crest)

Cationic, substantive white paste claimed to be a remarkable softening agent for treatment of Orlon and Dacron fabrics. It is compatible with resins and resin catalysts and is recommended for this use. This softener shows no yellowing of whites, no alteration of pastel shades and provides a full, soft lofty hand.

General Calendar

AMERICAN OIL CHEMISTS SOCIETY
Apr 21-23, 1958 (Memphis); Oct 20-22, 1958 (Chicago); Spring, 1959 (New Orleans); Fall, 1959 (Los Angeles)

AMERICAN SOCIETY FOR QUALITY CONTROL—TEXTILE DIVISION
8th Annual Conference—Jan 30-Feb 1, Clemson House, Clemson, SC

AMERICAN SOCIETY FOR TESTING MATERIALS (COMMITTEE D-13)
Mar 18-21 (Spring Meeting, Sheraton Park Hotel, Washington, DC)

THE DRYSALTERS CLUB OF NEW ENGLAND
Jan 20, May 2 (Hotel Vendome, Boston, Mass); June 20 (Outing—Wachusett Country Club, West Boylston, Mass)

THE FIBER SOCIETY
April 30—May 1 (The Clemson House, Clemson, SC

INDEX TO PATENT DIGEST

Following is an index, by subject and patent number, of the patent abstracts that have appeared in the Patent Digest during 1957.

SUBJECT INDEX

APPARATUS FOR CONTINUOUS DYEING——Turbulence Created by Serrations (U S Pat 2,779,183) 418

APPLYING NYLON EMULSIONS TO NYLON FABRICS (U S Pat 2,746,941) 221

BLEACHING POLYACRYLONITRILE FIBERS——Treatment with Dilute Acids (U S Pat 2,751,277) 303

BLUE AZODYES ON CELLULOSE ACETATE——Developed in Presence of Nonionic Agents (U S Pat 2,754,171) 222

CALENDER EFFECTS FIXED WITH RESINS——Mechanical Treatment in Wet State (Brit Pat 761,548) 500

CELLULOSE DERIVATIVES DYED WITH ACID DYES——Bicyclic Bases Used (Brit Pat 742,029) 23

CREASEPROOFING OF CELLULOSIC TEXTILES——Polyepoxy Compounds Applied (U S Pat 2,752,269) 221

CREASEPROOF AND PERMANENT FINISHES——Combination of Aminoplasts with Polyvinylalcohol (Brit Pat 742,885) 105

DAYLIGHT FLUORESCENT DYEINGS ON NYLON——Acid Dyes Used (U S Pat 2,759,786) 304

DIAZOAMINO COMPOUNDS PLUS NAPHTHOLS——Developed with Dichloro Adipic Acid (U S Pat 2,786,731) 736

DIRECT DYEINGS METALLIZED in Baths Containing Polyphosphoric Anions (U S Pat 2,785,040) 737

DURABLE CALENDER EFFECTS——Nonvolatile Acetals Applied (U S Pat 2,785,947) 500

DYEING ACRYLONITRILE FIBERS BY CUPROUS-ION TECHNIQUE——Vanadium, Molybdenum or Tungsten Salts Added (U S Pat 2,729,533) 22

DYEING ACRYLONITRILE POLYMERS——Heat and Pressure Pretreatment (U S Pat 2,750,250) 303

DYEING ACRYLONITRILE FIBERS WITH DIRECT DYES——Phosphonium Compounds Added (U S Pat 2,746,836) 154

DYEING NYLON——Pretreatment with Chlorosalicylic or Cresotinic Acids (U S Pat 2,743,231) 106

DYEING OF POLYACRYLIC FIBERS——Cuprous Ions Developed by Alternating Current (U S Pat 2,779,726) 532

DYEING OF SYNTHETIC FIBERS WITH ACID VATS——Controlled pH Conditions and Temperatures Applied (U S Pat 2,774,647-49) 415

DYEING OF WOOL-ACRYLIC FIBER BLENDS——Certain Basic Dyes Used For Acrylic Portion (U S Pat 2,772,943) 417

DYEING WITH LEUCOVATS SENSITIVE TO HIGH TEMPERATURES——Hydroxylamine Added (U S Pat 2,742,340) 106

FINISHING DACRON FABRICS——Free Shrinking Followed by Hot Alkaline Treatment (U S Pat 2,781,242) 928

FLAMEPROOFING WITH UREA-PHOSPHORIC ACID CONDENSATES plus Methyloimelamines (U S Pat 2,781,281) 928

GAS-FADING PREVENTION by Impregnating with Alkali Phthalates (U S Pat 2,758,002) 223

GAS-FADING PREVENTION——Dialkylaminoacrylate Polymers Applied (U S Pat 2,770,518) 415

HYDROPHOBING OF TEXTILES——Condensates of Zirconium Alcoholates and Fatty Acids Applied (U S Pat 2,774,689) 648

IMPROVING RUBBING FASTNESS OF AZO DYEINGS——Aftertreatment with Amine-Alkyleneoxide Condensates (Brit Pat 762,510) 500

METALLIZED AND WATER REPELLENT CLOTH (U S Pat 2,767,104) 376

OXIDATION DYEING AND PRINTING——with Aniline-4-Sulfamic Acid (U S Pat 2,783,121) 696

PIGMENT PRINTING COMPOSITION Containing Cellulose Ester Mixtures (U S Pat 2,761,789) 336

PIGMENT PRINTING PASTE——Polymers from Basic Nitrogen Compounds Reacted with Cross-Linking Agents (U S Pat 2,779,686) 696

PIGMENT PRINTING——Reaction Products of Polyamines and Cross-Linking Agents (U S Pat 2,762,718) 375

POLYACRYLIC FIBERS BLEACHED WITH PERMANGANATE (Brit Pat 742,349) 105

PRELIMINARY SHORT AGING OF PRINTS To Detect Defects in Printing (U S Pat 2,777,748) 417

PRINTING SOLUBILIZED (ACYLATED) AZODYES——Fixation by Peroxides Containing Alkaline Media (U S Pat 2,753,239) 221

SHRINKPROOF TEXTILES——Diglycidyl Ethers Applied (U S Pat 2,730,427) 22

SHRINKPROOFING WOOL WITH MONOPERSULFURIC ACID——Aftertreatment with Sulfites (U S Pat 2,739,034) 22

SHRINK-RESISTANT WOOL——Polymers of Hydroxyalkyl Vinyl Derivatives Applied (U S Pat 2,780,567) 532

STABILIZING CELLULOSIC FABRICS——Alkylsiliconehalide Vapors (U S Pat 2,782,090) 696

STRIPPING AND LIGHTENING WOOL DYEINGS——Nonionic Amine Derivatives Used (U S Pat 2,769,684) 375

TIPPY DYEING OF WOOL PREVENTED——Nonionic Amine Derivatives Used (U S Pat 2,763,530) 375

UNION DYEING WOOL-CELLULOSE ACETATE MIXTURES——Nonionic and Anionic Agents Added (U S Pat 2,760,841) 336

WATERPROOFING EMULSIONS——Organosilicon Compounds Plus Triethanolamine Titanate (U S Pat 2,735,791) 23

WATER-REPELLENT COMPOSITION——Organosilicones plus Titanium Compounds (U S Pat 2,774,690) 648

WATER-REPELLENT SILICONE RESINS——Emulsified with Stannous Hydroxide in Alkaline Medium (U S Pat 2,750,305) 222

WATER-REPELLENT THERMOPLASTIC FIBERS——Composition of Wax, Amine Soaps, Aluminum (or Zirconium or Titanium) Salts (U S Pat 2,759,851) 303

WATER-REPELLENT TREATMENT——Quaternized Condensates of Chloromethyl Acetamides and High Nitriles (U S Pat 2,750,306) 258

WAVED FINISH ON TEXTILES——Compressive Shrinking Device Used (U S Pat 2,768,092) 416

WOOL DYED IN ONE-BATH CHROMING PROCESS——Nonionic Amine Derivatives Added (U S Pat 2,763,529) 375

WRINKLE-RESISTANT FINISH Based on Acrolein-Formaldehyde Condensates (U S Pat 2,771,337) 415

PATENT INDEX

U S Pat 2,786,731 (Cassella Farbwerke 736

U S Pat 2,785,040 (Ciba Ltd) 737

U S Pat 2,783,121 (CFMC) 696

U S Pat 2,782,090 (Robbart) 696

U S Pat 2,781,281 (Ciba Ltd) 928

U S Pat 2,781,242 (Du Pont) 928

U S Pat 2,780,567 (Rohm & Haas) 532

U S Pat 2,779,726 (Deering Milliken Res Corp) 532

U S Pat 2,779,686 (Farbenfabr Bayer) 696

U S Pat 2,779,183 (Fornelli) 418

U S Pat 2,777,748 (Riegel Text Corp) 417

U S Pat 2,774,690 (Bradford Dyers' Assoc) 648

U S Pat 2,774,689 (Farbwerke Hoechst) 648

U S Pat 2,774,647-49 (Am Cyanamid Co) 415

U S Pat 2,772,943 (Du Pont) 417

U S Pat 2,771,337 (Dan River Mills) 415

U S Pat 2,770,518 (Celanese Corp of Am) 415

U S Pat 2,769,684 (Ciba Ltd) 375

U S Pat 2,768,092 (Cranston Print Wks) 416

U S Pat 2,768,055 (Gen Aniline & Film) 416

U S Pat 2,767,104 (The Cravenette Co) 376

U S Pat 2,764,466 (Du Pont) 417

U S Pat 2,763,530 (Ciba Ltd) 375

U S Pat 2,763,529 (Ciba Ltd) 375

U S Pat 2,762,718 (Farbenfabriken Bayer) 375

U S Pat 2,761,789 (Sandoz A G) 336

U S Pat 2,760,841 (Celanese Corp of Am) 336

U S Pat 2,759,851 (Am Cyanamid) 303

U S Pat 2,759,786 (Switzer Brothers) 304

U S Pat 2,758,002 (Brit Celanese) 223

U S Pat 2,754,171 (Celanese Corp of Am) 222

U S Pat 2,753,239 (Ciba Ltd) 221

U S Pat 2,752,269 (Shell Development Co) 221

U S Pat 2,751,277 (Eastman Kodak) 303

U S Pat 2,750,306 (Crown Chem Corp) 258

U S Pat 2,750,305 (Deering Milliken) 222

U S Pat 2,750,250 (Du Pont) 303

U S Pat 2,746,941 (H C Bick) 221

U S Pat 2,746,836 (Monsanto Chem Co) 154

U S Pat 2,743,231 (Heyden Chemical Corp) 106

U S Pat 2,742,340 (Gen Aniline & Film) 106

U S Pat 2,741,535 (Gen Aniline & Film) 105

U S Pat 2,739,034 (Stevenson [Dyers] Ltd) 22

U S Pat 2,735,791 (Soc Us Chim Rhone-Poulenc) 23

U S Pat 2,730,427 (Am Cyanamid) 22

U S Pat 2,729,533 (Du Pont) 22

Brit P 764,088 (Bradford Dyers' Assoc) 500

Brit P 762,510 (Ciba Ltd) 500

Brit P 761,548 (Bradford Dyers' Assoc) 500

Brit P 742,885 (Jos Bancroft & Sons Co) 105

Brit P 742,349 (Un Fabr Belges "Fabelta") 105

Brit P 742,029 (Bad Anilin & Sodafabrik) 23

LUME 46, NO. 25
ember 16, 1957
Pages 947 to 986)

OFFICIAL PUBLICATION OF THE PROCEEDINGS AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS

AMERICAN
DYESTUFF REPORTER
TEXTILE WET-PROCESSING

AMERICAN DYESTUFF REPORTER 40th ANNIVERSARY 1917 1957 NEW YORK, N. Y.

Geigy brings you a

true red

that will be the talk of the fashion world

MAXILON* RED BL
for Orlon® and other acrylic fibers

Here it is, just in time for the big season of reds ahead, Maxilon Red BL. A *true* red the like of which has never before been available, to give you the shades of red you've always wanted but were never able to get.

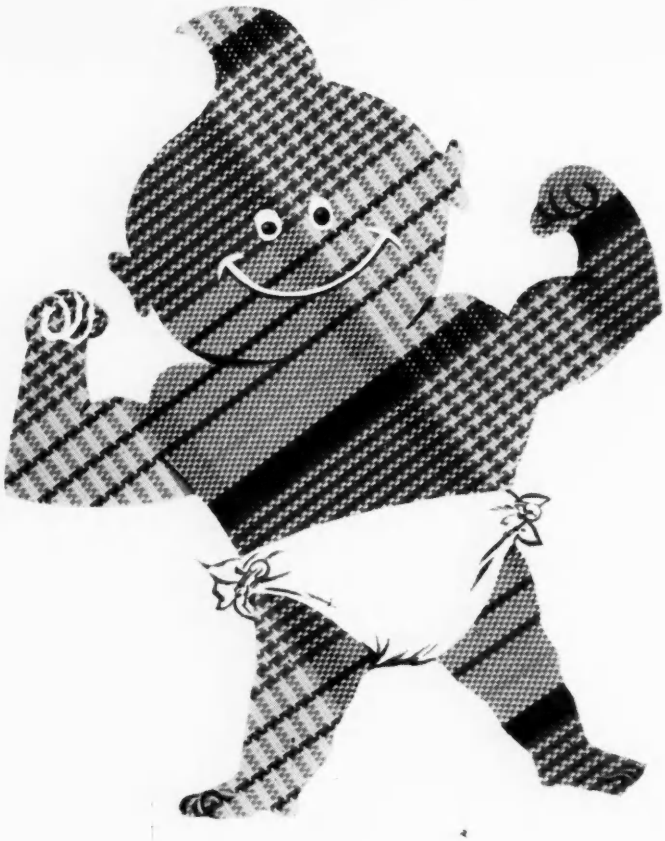
And, besides being the first *true* red, Maxilon Red BL rates a phenomenal 7 to 8 in light fastness, from the lightest pastels to the heaviest shades . . . has good build-up and dyeing properties with little affinity for wool, cotton or rayon.

Call your Geigy representative and counsel with him regarding the use of Maxilon Red BL in your operation. Or, send for BULLETIN 96-G.

GEIGY DYESTUFFS—
Division of Geigy Chemical Corporation,
Saw Mill River Road, Ardsley, New York.
Branches in all textile-producing centers.

GEIGY
dyestuff makers since 1859

*Geigy Registered Trademark (Pat. applied for)



I used to be a 7.2 pound weakling-- Wicaloid changed that fast!

Yes, sir, the big board quoted me at 7.2. . . upholstery production costs ran high and profits ran barely black. I called for a miracle and Wica came through. Heavy sley gave way to a light application of Wicaloid. Production simplified, costs down, profit up!

Is "your baby" vacillating on the market? Ol' Doc Wica has a formula to cut costs and speed sales growth where you'd least expect the need for latex.

We will treat a sample of your fabrics on request.

Wica

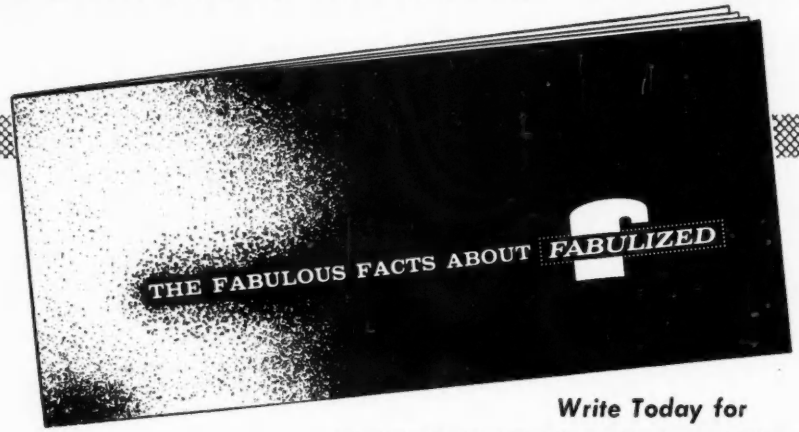
SPECTRUM ACCURACY

WICA CHEMICALS, INCORPORATED, OLD CONCORD ROAD • CHARLOTTE, NORTH CAROLINA

synthetic organic chemicals • textile specialties • latices • adhesives

FABULIZED

INCREASES SYNTHETIC FABRIC ABSORBENCY... IMPROVES PROFITS, TOO!



Write Today for

"THE FABULOUS FACTS ABOUT FABULIZED"

- **ABSORBENT***
- **SOFT**
- **COMFORTABLE**
- **EASY TO APPLY**
- **NO SPECIAL EQUIPMENT REQUIRED**

Learn how you can increase your sales with this new miracle finish that makes synthetic fabrics and blends *absorbent* as cotton, *soft* as silk. This twelve-page fact book answers pertinent questions about the FABULIZED process, its application, uses, and its fabulous profit potential.

The New Household Word for Synthetic Fabric Comfort

FABULIZED, INC.

518 S. Delaware Ave., Phila. 47, Pa. • *Phone:* WAlnut 5-2149

**4 times the absorbency of ordinary finishes, as tested by an independent laboratory*

WRITE TODAY

FABULIZED, INC.
518 S. Delaware Ave., Phila. 47, Pa.

Please send "THE FABULOUS FACTS ABOUT FABULIZED" ..... ☐
We would like to see a demonstration of FABULIZED ..... ☐

NAME .....

COMPANY .....

ADDRESS .....

Dazzling white whites—highly prized at the sales front, valued in the trade—can now be yours in wool, nylon, silk, acetate, many of the newer synthetics...and with the greatest of ease in measuring and handling! Calcofluor White RW Solution, newest addition to Cyanamid's Calcofluor Whites, may be applied like a normal dye; needs no special equipment; is readily dilutable to dyebath strength.

Available also in following forms:

CALCOFLUOR WHITE RW: Concentrated form, soluble in 10% Sulfuric Acid or Alcohol.

CALCOFLUOR WHITE RW SINGLE: Single strength form, soluble in 10% Sulfuric Acid or Alcohol.

CALCOFLUOR WHITE RWS: Single strength form, soluble in cool water.

Cyanamid also offers for cellulosic fibers a complete range of improved Calcofluor White brighteners. Fluorescent dyes have long been used by the industry to make textiles more attractive—but *nothing surpasses the newly improved Calcofluors for ease of application and whiter-than-white brilliance of end results!*

Ask your Cyanamid Dyes representative for full data and samples.

CYANAMID

1907 50 1957

*Trade Mark

AMERICAN CYANAMID COMPANY · DYES DEPARTMENT · BOUND BROOK, NEW JERSEY

Index to
AMERICAN
DYESTUFF REPORTER

Volume 46
January, 1957-December, 1957

Including the
Index to
PROCEEDINGS OF THE
AMERICAN ASSOCIATION OF
TEXTILE CHEMISTS AND COLORISTS

FOR the convenience of our readers, there appears below a list of page numbers in the respective issues for 1957. Those in the column entitled "General Pages" indicate general editorial pages and those in the column entitled "Proceedings Pages" appeared in the Proceedings of the American Association of Textile Chemists and Colorists.

The presence of the letter "P" before the page number anywhere in this index indicates that the material appeared in AATCC Proceedings.

Date of Issue	No.	General Pages	Proceedings Pages
January 14	1	1-24; 37-40	P25-P36
January 28	2	69-80	P41-P68
February 11	3	105-120	P81-P104
February 25	4	149-160	P121-P148
March 11	5	185-192	P161-P184
March 25	6	221-232	P193-P220
April 8	7	257-264	P233-P256
April 22	8	265-280; 303-312	P281-P302
May 6	9	313-316; 329-344	P317-P328
May 20	10	345-350; 373-384	P351-P372
June 3	11	385-396; 415-424	P397-P414
June 17	12	425-436; 459-464	P437-P458
July 1	13	465-472; 493-496	P473-P492
July 15	14	497-500; 519-528	P501-P518
July 29	15	529-532; 561-568	P533-P560
August 12	16	569-576; 603-608	P577-P602
August 26	17	637-648	P609-P636
September 9	18	649-654; 683-688	P655-P682
September 23	19	689-696; 711-718	P697-P710
October 7	20	719-738; 743-748	P739-P742
October 21	21	749-776; 781-788	P777-P780
November 4	22	789-792; 849-850	P793-P848
November 18	23	851-858; 888-890	P859-P887
December 2	24	891-930; 939-946	P931-P938
December 16	25	947-952; 977-986	P953-P976
December 30	26	1008-1010	P987-P1007

INDEX BY SUBJECT

AATCC Calendar P36, P63, P96, P130, P182, P194, P233, P288, P317, P370, P411, P447, P473, P517, P552, P601, P634, P679, P698, P742, P779, P848, P887, P932, P974, P990
AATCC NEWSLETTER P82, P318, P488
AATCC, Organization of the .. P68, P121, P184, P220, P302, P372, P458, P518, P636, P697, P798
AATCC Research Committee on Flammability of Clothing Textiles, Exhibit of the P887
AATCC Research, Progress Report—(Dorn) P25
AATCC Textile Dyeing & Finishing Exhibition, 1957 ..... P825
AATCC Treasurer, Derby Appointed P64
Absorption of Water by and Drying of Untreated, Laundered, and Used and Laundered Cotton and Linen Toweling (Petzel) 569
ABSTRACTS——
International Competition in Textiles 24
Silicones: Textile and Other Applications 24
Recent Developments in Wet Processing and Finishing 24
Union Dyeing 108
A Study of the Photochemistry of Dyes on Proteins and Other Substrates 108
A Review of Developments in the Properties, Processing and Utilization of Man-made Fibers 108
Waterproofing of Cotton Textiles 108
Are Washable Goods Always Washable? 109
Fading and Related Effects Associated with the Radiation from Light Sources 109
Synthetic Macromolecules and Their Importance in Textile Processing 109
Some Remarks on the Degradation of Dyeings in Inclement Weather 110
Polyvinyl Alcohol Fibers 110
Sensitivity of Vat Dyes to Sunlight in Presence of Soap 152
Properties and Handling of Agilon Yarn 152
Progress in the Electron Microscopy of Textile Fibers 152
Some Aspects of Modern Dyeing and Finishing of Man-made Fibers 152
The Photochemical Oxidation of Wool in the Presence of Fluorescent Compounds 153
Application Methods for Improving Levelness of Dyes on Nylon 153
A Copper Process for Prolonged Microbiological Protection of Cellulosic Fabrics by Chemical Modification 153
"Care-free" Fabrics and Garments 154
The Separation and Examination of Fiber Blends 224
What Radioisotopes Can Do for Textiles 224
Reactive Dyes 224
Some Investigations Into the Application of Dyes to Acrylic Fibers 225
Properties and Possibilities of Polyvinyl Alcohol Fibers 225
The Vapacol Dyeing Process 225
The Laundering of Textiles Made from Man-made Fibers 225
The Identification of Vat Dyes 226
Verel Acrylic Fiber: Physical and Chemical Aspects 226
Verel Acrylic Fiber: Its Dyeing and Finishing Properties 226
Evaluation of Verel Fiber 226
The Disperse Dyes: Their Development and Application. (Mercer Lecture) 257
Faults in the Bleaching of Piecegoods 257
The Dyeing of New Yarns and Fabrics 257
Some New Advances Reported in Rayon and Man-made Fibers 258
Dyeing Acrilan Jersey 304
The Compressive Shrinkage of Fabrics 304
Eastman's New 50 Yarn 312
Fastness to Rubbing of Azoic Colors 315
Comparison of Wrinkle-resistant Finishes for Cotton 315
Smog: Its Effect on Dyes and Textiles 316
Theory of Dyeing Polyester and Polyacrylic Fibers 316
Cotton Bleaching and Dyeing Wastes: A Specific Solution and a General Prescription 316
The Soiling Characteristics of Textile Fibers, Part II—The Influence of Fiber Geometry on Soil Retention 316
Pigment Padding Process 373
Studies on Permanent Creasing of Cotton Garments 373
A Preliminary Report on Fully Acetylated Cotton 373
Epoxy Resins in the Creaseproofing of Cotton 373
The Battle of the Fibers 374
Man-made Fibers in the Carpet Trade: Dyeing of Staple and Yarns 374
Continuous Dyeing with Direct Dyestuffs 374
Improved Polymers and Copolymers of Acrylonitrile 376
Identification of Synthetic Fibers by Micro Fusion Methods 432
Glass-fiber Fabrics Find More Industrial Uses 432
A Critical Appraisal of the International Daylight Fastness Test 459
The Lightfastness of Dyed Fibers—A Statistical Study 459
The Mechanics of Carrier Action in Dyeing Dacron Polyester Fiber 459
Factors Affecting Rate of Dyeing of Cationic Dyes on the Whiter, More Dyeable Orlon Type 42 Acrylic Fiber 460
Technology of Dyeing Triacetate 472
Something New in Finishes 472
Terylene Polyester Fiber 472
Modern Detergents 528
New Bleaching Range for Use with Sodium Chlorite 528
Review on "Wash and Wear" Cottons 561
ISO Activities—Colorfastness and Shrinkage in Laundering 561
Why Dyed Cellulose Fibers Rot 561
The Influence of Higher Temperatures on Natural and Synthetic Fibers 562
Cyanoethylation of Cotton 562
Apponaug Co Gets Good Results with Molten-metal Dyeing Machine 562
Peroxide Bleaching of Minor Vegetable Fibers 576
Dyeing and Drying of Tufted Carpets 576
The Backing of Tufted Carpets with Compounded Rubber Latex 608
The Yellowing of Nylon 608
Some Observations on the Dyeing of Dicel and Tricel Yarns and Fabrics 608
A Study of the Weathering Characteristics of Cotton Fabrics Containing Inorganic Compounds. II—Further Work on Copper-Chromium Treatments 711
Chemical Constitution and Textile Properties of Synthetic Macropolymers 711
Two Polyamide Fibers Compared: Nylon 66 and Nylon 6. The German View 711
Problems Posed by the Newer Synthetic Fibers 712
How Modern Metallic Yarns are Made 712
Textile Applications of Fluid Beds 737
New and Durable Antistatic Finishes 738
Man-made Fibers in the Medical World 738
Sequestering Agents, with Special Reference to Dyeing 738
Finishing Blends of Dacron and Cotton 760
Dyeing of Type 42 Orlon Acrylic Fiber 776
Relation between Physical State and Rate of Fading of Dyes 858
Technology of Finishing Triacetate 858
New Knowledge Concerning the Functional Properties of Formaldehyde in Cotton and Rayon Finishing 977
Dyeing Terylene Stockings 978
Arnel Tricot Antistat 978
How to Pad-dye Polyamide and Polyester Fibers 978
Vat Dye Printing Without Starch 978
Fabrics Treated with Dimethylol Ethylene Urea 979
Zefran 979
Wool and Man-mades Go Well Together 979
Effect of Laundering and Starching on the Serviceability of Cotton shirts 980
Discoloration of Orlon Sweaters in Drycleaning 980
Application of Sulfur Dyes 980
The Industrial Chemistry, Properties, and Application of Silicones 980
Abstracts of Intersectional Contest Papers P832
Abstracts of Technical Papers P833
Accelerated Aging Tests for Latex-Backed Fabrics, The Need for Standardizing (Boggs and Taitel) 345
Accelerotor, Wear Tests with the (Macormac and Richardson) 149
Accounting for Effective Control, Cost (Ehmann) P529
Acid and Substantive Anthraquinone Dyestuffs, Recent Advances in the Field of (Gunthard) 9
Acid Dye Structures on the Rate of Wool Dyeing, Effect of Certain (Skinkle and Makuch) P578
Acids and Swelling Agents on the Dyeing of Orlon 42 with an Anionic Azo Dye, Effect of (Part I of "Dyeing of Hydrophobic Fibers") (Skinkle and Denio) P706
Acrilan-Wool Blends, The Chem-acril Process for the Union Dyeing of (Hindle) P968
Acrylic Fiber—Application of Cationic Dyes, Dyeing of Orlon (Neary and Thomas) P625
Activated Hydrogen Peroxide Bleaching Process, Solvay (Steele and Rogers) P965
Activities of the Committee—1953-1956, Review of the (Committee on Damage Caused by Retained Chlorine) P237
Activities of the Local Sections P36, P66, P81, P140, P182, P212, P234, P289, P370, P412, P455, P492, P514, P558, P601, P634, P680, P708, P743, P780, P886, P974, P1004
Adams-Nickerson Equation, A Nomograph For Calculating Color Differences Using the (Adams, Derby Jr, Ernsberger and Solo) P740
Address by the Chairman of the Executive Committee on Research (Dorn) P739, P999
Address by the President (Linberg) P803
ADR Award to Irving A Berstein, 1957 ..... P885
Advances in the Field of Acid and Substantive Anthraquinone Dyestuffs, Recent (Gunthard) 9
Aeration of Cotton Finishing Wastes, Dispersed Growth (II—Effect of High pH and Lowered Air Rate) (Nemerow) 575
Aftermercerization of Methylolmelamine Resin-Treated Cotton Fabrics (Mazzeno Jr, Reinhardt, Markezich and Reid) 719
Aging Tests for Latex-Backed Fabrics, The Need for Standardizing Accelerated (Boggs and Taitel) 345
Aids to Quantitative Reflectance Spectrophotometry of Dyeings, Some Graphical (Darbey) 465
Alphabetical List of New Products Developed Since November, 1956 891
Amendments to the Constitution, Proposed P577
American Dyestuff Reporter Award, 7th P803
America's Debt to Perkin (Lenher) P131
Amino Aldehyde Finishes on Textiles, A Chromatographic Method for the Identification of (Norwick and Bierig) 314
Analyzing Textile Fiber Mixtures, Selective Solvents for (Praeger) 497, 654
Anionic Azo Dye, Effect of Acids and Swelling Agents on the Dyeing of Orlon 42 with an (Part I of "Dyeing of Hydrophobic Fibers") (Skinkle and Denio) P706
Anthraquinone Dyestuffs, Recent Advances in the Field of Acid and Substantive (Gunthard) 9
Application of Cationic Dyes, Dyeing of Orlon Acrylic Fiber—(Neary and Thomas) P625
Application of Color in the Manufacture of Man-Made Fibers, The Internal (Canadian Association of Textile Colourists and Chemists) P125
Application of Colorants to Glass Fiber Textiles, The (Caroselli) P195
Applications of Radioactivity in the Textile Industry (Berstein) P399
Applications of Sonic Techniques in the Textile Industry (Junger) P58
Approach to the Development of Detergents for Raw Wool Scouring, A Conservative (Kobayashi) 694
Army Requirements for Textiles, How Atomic Warfare has Changed (Kennedy) P478
Art of Bleaching, Progress in the (Easton and Weinberg) P161
Art of Textile Printing, History of the (Baumann) P165
Assay of Sodium Hydrosulfite (AATCC Committee on Analytical Methods) P443
Assessment of Colorfastness of Dyes on Textiles, The Standard Depths of Shade in Relation to the (Rabe) P504
Atomic Energy and the Textile Researcher (Siu) 391
Atomic Warfare has Changed Army Requirements for Textiles, How (Kennedy) P478
Authors of Papers, Notice to ..... (See Notice to Authors of Papers)
Automotive Fabrics——Factors Which Affect Lightfastness (Schmitt) P351
Auxiliaries. II—Determination of Vat Acid Dispersion Power of Surfactants, The Standardization of Test Methods for Textile (Schwen and Rackemann) 278
Award, 7th American Dyestuff Reporter P803

Award to Irving A Berstein, 1957 ADR P885
Azo Dye, Effect of Acids and Swelling Agents on the Dyeing of Orlon 42 with an Anionic (Part I of "Dyeing of Hydrophobic Fibers") (Skinkle and Denio) P706
Berstein, 1957 ADR Award to Irving A P885
Binders for Nonwoven Fabrics (Sherwood) P323
Birthday, Reporter Reaches Fortieth 789
Bleach Baths, Determination of Hydrogen Peroxide in (AATCC Committee on Bleaching) P397
Bleaching Process, Solvay Activated Hydrogen Peroxide (Steele and Rogers) P965
Bleaching, Progress in the Art of (Easton and Weinberg) P161
Blends Form the Future, Finishes and (Woodruff) P501
Blends of Dacron Polyester Fiber and Cotton, Dyeing (Iannarone Jr, Speakman, Larson, Hurt and Hinton) P674
Blends, The Chem-acril Process for the Union Dyeing of Acrilan-Wool (Hindle) P968
BOOK REVIEWS———
Perspectives in Organic Chemistry 185
Lange's Handbook of Chemistry 185
The Mechanical Properties of Textile Fibers 185
ASTM Standards on Soaps and Other Detergents (with Related Information) 185
Chemical-Engineering Cost Estimation 186
Official Methods of Analysis of the Association of Official Agricultural Chemists (Eighth Edition—1955) 186
Chemical Market Research in Practice 186
Hydrogen Peroxide (ACS Monograph No. 128) 192
Modern Chemical Processes—Vol IV 223
Acridines (Vol IX—The Chemistry of Heterocyclic Compounds) 223
Chemical Trade Names and Commercial Synonyms—2nd Edition 223
Textbook of Polymer Chemistry 390
Corrosion: A Compilation 390
Bradford Durfee College of Technology P813
Calculating Color Differences Using the Adams-Nickerson Equation, A Nomograph for (Adams, Derby Jr, Ernsberger and Solo) 649
Calendar, AATCC (See AATCC Calendar)
Calendar, General 38, 70, 116, 156, 190, 230, 262, 280, 335, 382, 418, 461, 564, 645, 712, 748, 786, 940, 1009
Camphene et le Degraissuer—The Origins of Drycleaning (Edelstein) 1
Candidates, Olney Medal Award P86
Carpet Dyeing, Recent Developments in (Wygand) P987
Catalyst of Commerce, Part II, Color—The (Panel) P235
Cationic Dyes, Dyeing of Orlon Acrylic Fiber—Application of, (Neary and Thomas) P625
Cationic Softeners—Their Secondary Effects on Textile Fabrics (Philadelphia Section) P41
Cellulose Acetate, Interfacial Film Phenomena in the Dyeing of (Skinkle and Sherburne) 749
Cellulose Derivatives by Means of the X-Ray Diffractometer, Characterization of (Segal and Conrad) 637
Cellulose with Simple Salt Solutions and with Dyebaths, The Interaction of (Moncrieff-Yeates and White, Jr) P87, P148
Centennial, Perkin (See Perkin Centennial)
Century of Progress in the Development of Colorfastness Test Methods for Textiles, A (Staples) P199
Certificates Issued, New Corporate Membership P26
Chairmen———Committees of the Council P801
Changing Trends in Military Requirements (Symposium) P475
Chapin, Sampson Elected Honorary Members P448
Characterization of Cellulose Derivatives by Means of the X-Ray Diffractometer (Segal and Conrad) 637
Chem-acril Process for the Union Dyeing of Acrilan-Wool Blends, The (Hindle) P968
Chemical and Processing Techniques, Nonwoven Fabrics—The (Taylor) P437
Chemical Modification of Natural Fibers (Buras) 929
Chemical Specialties, Notice to Manufacturers of Textile P846
Chemicals (New Products) 893
Chinese Green, Lo-Kao, The Story of (Edelstein) 433
Chromatographic Method for the Identification of Amino Aldehyde Finishes on Textiles, A (Norwick and Bierig) 314
Cleaning of Synthetic Fur-Pile Fabrics (Lyle) P699
Clothing Textiles, Exhibit of the AATCC Research Committee on Flammability of P887
Colleges in the New England Region, Textile P813
Color Differences Using the Adams-Nickerson Equation, A Nomograph for Calculating (Adams, Derby Jr, Ernsberger and Solo) 649
Color in the Manufacture of Man-Made Fibers, The Internal Application of (Canadian Association of Textile Colourists and Chemists) P125
Color—The Catalyst of Commerce, Part II (Panel) P235
Colorants to Glass Fiber Textiles, The Application of (Caroselli) P195
Colorfastness of Dyes on Textiles, The Standard Depths of Shade in Relation to the Assessment of (Rabe) P504
Colorfastness Test Methods for Textiles, A Century of Progress in the Development of (Staples) P199
Colorfastness to Light, Committee on (Norton) P406
Colorfastness to Washing, Committee on (Smith) P405
Coloring Materials Developed Since November, 1956 904
Colour Index Announcements P31, P65, P143, P215, P297, P449, P710, P845, P976, P1007
Colour Index—Cross Indices P610, P655
Commerce Part II, Color—The Catalyst of (Panel) P235
Committee—1953-1956, Review of the Activities of the (Committee on Damage Caused by Retained Chlorine) P237
Committees for the 36th National Convention P802
Committees of the Council—1957 ..... P136
Comparison of Wrinkle-resistant Finishes for Cotton (Cooke, Roth, Salisbury, Switlyk and Van Loo) P585, 654
Constitution, Proposed Amendments to the P577
Control, Cost Accounting for Effective (Ehmann) P539
Control, Practical Problems in Inventory (Halbach) P549
Convention Attracts 1730 Registrants, 36th P953
CONVENTION, NATIONAL (Atlantic City)———
The Interaction of Cellulose with Simple Salt Solutions and with Dyebaths (Moncrieff-Yeates and White, Jr) P87
CONVENTION, NATIONAL (Boston)———
1957 AATCC Convention Committee P139
Papers for 1957 Convention P398
Convention Notes P455, P634, P698, P779
Greetings from the President (Linberg) P793
Greetings from the Vice Presidents (Kaswell, Helmus, Smith and Morrill) P794
Greetings from the New England Region's Sectional Chairmen (Bell, Caroselli and Gillick) P795
Technical Program P796
Special Events P797
Ladies Program P797
Special Tours to Schools and Research Centers P797
Reception P797
National Officers of AATCC P799
Past Presidents P800
Chairmen—Committees of the Council P801
Committees for the 36th National Convention P802
7th American Dyestuff Reporter Award P803
Your Hosts—The New England Sections:———
Northern New England Section (Sampson) P804
Rhode Island Section (Joerger and Cady) P811
Western New England Section (Goodwin) P812
Employment Service at Convention P812
Textile Colleges in the New England Region:———
Bradford Durfee College of Technology P813
Lowell Technological Institute P814
New Bedford Institute of Technology P817
Rhode Island School of Design P818
Your National Headquarters (Paine) P821
1957 AATCC Textile Dyeing & Finishing Exhibit P825
1957 Intersectional Contest P829
Abstracts of Contest Papers P832
Abstracts of Technical Papers P833
P J Wood to be Awarded 14th Olney Medal P841
36th Convention Attracts 1730 Registrants P953
Piedmont Section Repeats as Intersectional Contest Winner P962
Technical Session:———
Solvay Activated Hydrogen Peroxide Bleaching Process (Steele and Rogers) P965
Olney Medal Luncheon———:
The Pursuit of Happiness (Wood) P1002
Annual Banquet:———
President's Address (Linberg) P999
Convention, National (New York)—(See Perkin Centennial)
Convention Programs Wanted P887, P932
Corporate Membership Certificates Issued, New P26
Cost Accounting for Effective Control (Ehmann) P539
Cotton and Linen Toweling, Absorption of Water by and Drying of Untreated, Laundered, and Used and Laundered (Petzel) 569
Cotton by Treatment with Dicyandiamide, Improvement of Heat Endurance of (Sloan and Buras Jr) 529
Cotton, Comparison of Wrinkle-resistant Finishes for (Cooke, Roth, Salsbury, Switlyk and Van Loo) P585, 654
Cotton, Dyeing Blends of Dacron Polyester Fiber and (Iannarone, Jr, Speakman, Larson, Hurt and Hinton) P674
Cotton Fabrics, Aftermercerization of Methylolmelamine Resin-treated (Mazzeno Jr, Reinhardt, Markezich and Reid) 719
Cotton Finishing Wastes, Dispersed Growth Aeration of (II—Effect of High pH and Lowered Air Rate) (Nemerow) 575
Cottons, The Effect of Silicone Softeners on Resin-treated (Simpson) P991
COUNCIL
204th Meeting P97
205th Meeting P136, P138, P292
206th Meeting P281
207th Meeting P474
208th Meeting P973
Council, Chairmen—Committees of the P801
Council—1957, Committees of the P136
Cross Indices, Colour Index P610, P655
Dacron Polyester Fiber and Cotton, Dyeing Blends of (Iannarone Jr, Speakman, Larson, Hurt and Hinton) P674
Damage Caused by Retained Chlorine, Committee on (Aurich) P408
Degraisseur—The Origins of Drycleaning—Camphene et le (Edelstein) 1
DELAWARE VALLEY SECTION———
Reports P36, P66, P148, P182, P234, P370, P515, P634, P743, P974
Depths of Shade in Relation to the Assessment of Colorfastness of Dyes on Textiles, The Standard (Rabe) P504
Derby Appointed AATCC Treasurer P64
Derivatives by Means of the X-Ray Diffractometer, Characterization of Cellulose (Segal and Conrad) 637
Design of a Luster-Meter for Quality Control (Smith, Thompson and Kaye) 725
Detergents for Raw Wool Scouring, A conservative Approach to the Development of (Kobayashi) 694
Determination of Hydrogen Peroxide in Bleach Baths (AATCC Committee on Bleaching) P397
Development of Detergents for Raw Wool Scouring, A Conservative Approach to the (Kobayashi) 694
Development of Fast Dyes, The History of the (Fordemwalt) P244, 340
Developments in Textile Preservation, New (Klens and Stewart) 346
Developments in Vat Dyeing, Recent (Fletcher) P319
2,2'—Dihydroxy 5,5'—Dicholorodiphenyl Methane as a Textile Fungicide, Some Aspects of the Use of (Rose, Fraser and Bayley) 385
Dicyandiamide, Improvement of Heat Endurance of Cotton by Treatment with (Sloan and Buras Jr) 529
Diffractometer, Characterization of Cellulose Derivatives by Means of the X-Ray (Segal and Conrad) 637
Dimensional Changes in Textile Fabrics, Committee on (Warner) P409
Dispersed Growth Aeration of Cotton Finishing Wastes, (II—Effect of High pH and Lowered Air Rate) (Nemerow) 575
Dispersion Power of Surfactants, The Standardization of Test Methods for Textile Auxiliaries, II—Determination of Vat Acid (Schwen and Rackemann) 278
Distribution of Textiles, The New Look in Military Purchasing and (MacLaughlin) P475
Drycleaning,—Camphene et le Degraisseur—The Origins of (Edelstein) 1
Drycleaning Test Methods, Two New (AATCC Committee on Drycleaning Test Methods) P859
Drying of Untreated, Laundered, and Used and Laundered Cotton and Linen Toweling, Absorption of Water by and (Petzel) 569
Dye is Evaluated to Decide if It is Worth Marketing, How a New (Klein) P489
Dyebaths, The Interaction of Cellulose with Simple Salt Solutions and with (Moncrieff-Yeates and White, Jr) P87, P148
Dyeing & Finishing Exhibition, 1957 AATCC Textile P825
Dyeing Blends of Dacron Polyester Fiber and Cotton (Iannarone Jr, Speakman, Larson, Hurt and Hinton) P674
Dyeing, Effect of Certain Acid Dye Structures on the Rate of Wool (Skinkle and Makuch) P578
Dyeing of Acrilan-Wool Blends, The Chem-acril Process for the Union (Hindle) P968
Dyeing of Cellulose Acetate, Interfacial Film Phenomena in the (Skinkle and Sherburne) 749
Dyeing of Hydrophobic Fibers, Part I—Effect of Acids and Swelling Agents on the Dyeing of Orlon 42 with an Anionic Azo Dye (Skinkle and Denio) P706

Dyeing of Orlon Acrylic Fiber—Application of Cationic Dyes (Neary and Thomas) P625
Dyeing of Orlon 42 with an Anionic Azo Dye, Effect of Acids and Swelling Agents on the (Part I of "Dyeing of Hydrophobic Fibers"): (Skinkle and Denio) P706
Dyeing of Synthetic Fibers—A Dyer's Potpourri (Turnbull) P509
Dyeing of Wool, Hair and Polyamide Fibers with Metal Complex Dyes, The (Schoenpflug) 851
Dyeing, Recent Developments in Carpet (Wygand) P987
Dyeing, Recent Developments in Vat (Fletcher) P319
Dyeing Techniques, Modern Textile (Meunier) P250
Dyeings, Some Graphical Aids to Quantitative Reflectance Spectrophotometry of (Darbey) 465
Dyer's Potpourri, Dyeing of Synthetic Fibers—A (Turnbull) P509
Dyes on Textiles, The Standard Depths of Shade in Relation to the Assessment of Colorfastness of (Rabe) P504
Dyes, The Dyeing of Wool, Hair and Polyamide Fibers with Metal Complex (Schoenpflug) 851
Dyes, The History of the Development of Fast (Fordemwalt) P244, 340
Dyes, The Sulfur (Crist and Rupp) P83
Dyestuffs, Leucoesters of Vat (Luttringhaus) P283
Dyestuffs, Recent Advances in the Field of Acid and Substantive Anthraquinone (Gunthard) 9
Effect of Acids and Swelling Agents on the Dyeing of Orlon 42 with an Anionic Azo Dye, Part I—(Dyeing of Hydrophobic Fibers) (Skinkle and Denio) P706
Effect of Certain Acid Dye Structures on the Rate of Wool Dyeing (Skinkle and Makuch) P578
Effect of High pH and Lowered Air Rate (Dispersed Growth Aeration of Cotton Finishing Wastes) (Nemerow) 575
Employment Register P65, P104, P148, P181, P211, P233, P364, P414, P447, P473, P680, P698, P742, P779, P848, P885, P932, P972
Equipment Developed Since November, 1956 915
Equipment Used in the Manufacture of Nonwoven Fabrics, Fibers and (Brennan) P583
Evaluation of Whitening Efficiency of Fluorescent Whitening Agents (Allen) 425
Events, Special P797
Executive Committee on Research, Address by the Chairman of the (Dorn) P740
Exhibit of the AATCC Research Committee on Flammability of Clothing Textiles P887
Exhibition, 1957 AATCC Textile Dyeing & Finishing P825
Exhibition, 43rd Knitting Arts 265
Fabrics, Cationic Softeners—Their Secondary Effects on Textile (Philadelphia Section) P41
Fading, A Study of the Variables Encountered in Natural Light (AATCC Committee on Colorfastness to Light) P861
Far-Infrared for Textile Finishing (Thomson) P171
Fast Dyes, The History of the Development of (Fordemwalt) P244, 340
Fiber Markets, Textile Properties and (Kaswell) 689
Fiber to Fabric, With Glycerine from (Parolla and Draves) 761
Fibers and Equipment Used in the Manufacture of Nonwoven Fabrics (Brennan) P583
Fibers, The Internal Application of Color in the Manufacture of Man-made (Canadian Association of Textile Colourists and Chemists) P125
Film Phenomena in the Dyeing of Cellulose Acetate, Interfacial (Skinkle and Sherburne) 749
Finishes and Blends Form the Future (Woodruff) P501
Finishes for Cotton, Comparison of Wrinkle-resistant (Cooke, Roth, Salsbury, Switlyk and Van Loo) P585, 654
Finishes, Frontiers in Fabrics and (Seery) P480
Finishes on Textiles, A Chromatographic Method for the Identification of Amino Aldehyde (Norwick and Bierig) 314
Finishing Exhibition, 1957 AATCC Textile Dyeing & P825
Finishing, Far-Infarred for Textile (Thomson) P171
Finishing, Impregnation for Water Repellency and Its Logical Use with Synthetic-resin (Ruile) 947
Finishing Wastes, Dispersed Growth Aeration of Cotton (II— Effect of High pH and Lowered Air Rate) (Nemerow) 575
Flammability of Clothing Textiles, Exhibit of the AATCC Research Committee on P887
Fluorescent Whitening Agents, Evaluation of Whitening Efficiency of (Allen) 425
Frontiers in Fabrics and Finishes (Seery) P480
Fungicide, Some Aspects of the Use of 2,2'—Dihydroxy 5.5'—Dichlorodiphenyl Methane as a Textile (Rose, Fraser and Bayley) 385
Fur-Pile Fabrics, Cleaning of Synthetic (Lyle) P699
Future, Finishes and Blends Form the (Woodruff) P501
Future of Textiles, The (Leslie) P123
Future Papers (See Papers, Future)
Glass Fiber Textiles, The Application of Colorants to (Caroselli) P195
Glycerine from Fiber to Fabric, With (Parolla and Draves) 761
Graphical Aids to Quantitative Reflectance Spectrophotometry of Dyeings, Some (Darbey) 465
Grease Wool Scouring, The Practical Aspects of Neutral (McNamara, Jr) 731
Green, Lo-Kao, The Story of Chinese (Edelstein) 433
Greetings from the New England Region's Sectional Chairmen (Bell, Caroselli and Gillick) P795
Greetings from the President (Linberg) P793
Greetings from the Vice Presidents (Kaswell, Helmus, Smith and Morrill) P794
Hadley, First AATCC Secretary, Walter E (Obituary) 261
Hair and Polyamide Fibers with Metal Complex Dyes, The Dyeing of Wool, (Schoenpflug) 851
Happiness, The Pursuit of (Wood) P1002
Headquarters, Your National (Paine) P821
Heat Endurance of Cotton by Treatment with Dicyandiamide, Improvement of (Sloan and Buras Jr) 529
History of the Art of Textile Printing (Baumann) P165
History of the Development of Fast Dyes, The (Fordemwalt) P244, 340
Highlights of the Past Year (Wood) 920
Honorary Members, Chapin, Sampson Elected P448
Hosiery, Preliminary Investigation of Stretch-type Nylon Military (Zimmerman and Pope) 270
How a New Dye is Evaluated to Decide if it is Worth Marketing (Klein) P489
How to Get the Most Out of a Reducing Agent 499
HUDSON-MOHAWK SECTION—
Reports P182, P370, P492, P680, P886, P974
Hydrogen Peroxide Bleaching Process, Solvay Activated (Steele and Rogers) P965
Hydrogen Peroxide in Bleach Baths, Determination of (AATCC Committee on Bleaching) P397
Hydrophobic Fibers, Dyeing of (Part I—Effect of Acids and Swelling Agents on the Dyeing of Orlon 42 with an Anionic Azo Dye) (Skinkle and Denio) P706
Identification of Amino Aldehyde Finishes on Textiles, A Chromatographic Method for the (Norwick and Bierig) 314
Identification on Textiles, A Rapid Test for Resin (Howard) 313
Impregnation for Water Repellency and Its Logical Use with Synthetic-resin Finishing (Ruile) 947
Improvement of Heat Endurance of Cotton by Treatment with Dicyandiamide (Sloan and Buras Jr) 529
Index to Patent Digest 107, 1010
Interaction of Cellulose with Simple Salt Solutions and with Dyebaths, The (Moncrieff-Yeates and White, Jr) P87, P148
Interfacial Film Phenomena in the Dyeing of Cellulose Acetate Skinkle and Sherburne) 749
Intersectional Contest, 1956 AATCC (See Perkin Centennial)
Intersectional Contest, 1957 AATCC P829
Intersectional Contest Winner, Piedmont Section Repeats as P962
Introduction to Quality Control (Romer) P537
Inventory Control, Practical Problems in (Halbach) P549
Investigation of Stretch-type Nylon Military Hosiery, Preliminary (Zimmerman and Pope) 270
Knitting Arts Exhibition, 43rd 265
Ladies Program P797
Latex-Backed Fabrics, The Need for Standardizing Accelerated Aging Tests for (Boggs and Taitel) 345
Letters to the Editor P214
Leucoesters of Vat Dyestuffs (Luttringhaus) P283
Light, Committee on Colorfastness to (Norton) P406
Light Fading, A Study of the Variables Encountered in Natural (AATCC Committee on Colorfastness to Light) P861
Lightfastness, Automotive Fabrics——Factors Which Affect (Schmitt) P351
Linberg Reelected President P931
Linen Toweling, Absorption of Water by and Drying of Untreated, Laundered, and Used and Laundered Cotton and (Petzel) 569
List of New Products Developed Since November, 1956, Alphabetical 891
Literature, Technical 77, 116, 264, 383, 424, 464, 524, 607, 788
Lo-Kao, The Story of Chinese Green (Edelstein) 433
Lowell Technological Institute P814
LOWELL TECHNOLOGICAL INSTITUTE STUDENT CHAPTER——
Reports P289, P455
Lurex, Wet Processing of (Seidel) P27
Luster-Meter for Quality Control, Design of a (Smith, Thompson and Kaye) 725
Man-Made Fibers, The Internal Application of Color in the Manufacture of (Canadian Association of Textile Colourists and Chemists) P125
Manufacture of Nonwoven Fabrics, Fibers and Equipment Used in the (Brennan) P583
Marketing, How a New Dye is Evaluated to Decide if It is Worth (Klein) P489
Markets, Textile Properties and Fiber (Kaswell) 689
Membership Applications P59, P104, P139, P181, P214, P296, P317, P364, P398, P473, P517, P552, P601, P680, P742, P779, P884, P973
Membership Certificates Issued, New Corporate P26
Membership, Elected to P137, P633, P698, P848, P964
Metal Complex Dyes, The Dyeing of Wool, Hair and Polyamide Fibers with (Schoenpflug) 851
Method for the Identification of Amino Aldehyde Finishes on Textiles, A Chromatographic (Norwick and Bierig) 314
Methylolmelamine Resin-Treated Cotton Fabrics, Aftermercerization of (Mazzeno Jr, Reinhardt, Markezich and Reid) 719
MID-WEST SECTION——
Reports P81, P182, P290, P370, P414, P560, P780, P886, P975, P1004
Military Hosiery, Preliminary Investigation of Stretch-type Nylon (Zimmerman and Pope) 270
Military Purchasing and Distribution of Textiles, The New Look in (MacLaughlin) P475
Military Requirements, Changing Trends in (Symposium) P475
Mixtures, Selective Solvents for Analyzing Textile Fiber (Praeger) 497, 654
Modern Textile Dyeing Techniques (Meunier) P250
Modification of Natural Fibers, Chemical (Buras) 929
Names in the News 39, 77, 119, 159, 191, 231, 263, 308, 343, 381, 423, 463, 496, 522, 567, 604, 647, 687, 714, 747, 787, 850, 890, 945, 986
National Headquarters, Your (Paine) P821
National Officers, Past Presidents and Chairmen of Committees of the Council P799
Natural Fibers, Chemical Modification of (Buras) 929
Natural Light Fading, A Study of the Variables Encountered in (AATCC Committee on Colorfastness to light) P861
Need for Standardizing Accelerated Aging Tests for Latex-Backed Fabrics, The (Boggs and Taitel) 345
Neutral Grease Wool Scouring, The Practical Aspects of (McNamara Jr) 731
System, New Aspects of the Pad-Roll (Mellbin) 770
New Bedford Institute of Technology P817
NEW BEDFORD INSTITUTE OF TECHNOLOGY STUDENT CHAPTER——
Report P212
New England Region, Textile Colleges in the P813
New England Sections, Your Hosts ——The P804
New Look in Military Purchasing and Distribution of Textiles, The (MacLaughlin) P475
NEW YORK SECTION——
Reports P36, P81, P142, P212, P234, P290, P412, P455, P514, P602, P634, P743, P886, P1004
News of the Trade 37, 69, 111, 155, 187, 227, 259, 305, 337, 377, 419, 461, 493, 519, 563, 603, 643, 683, 713, 745, 781, 888, 941, 982
Newsletter, AATCC (See AATCC Newsletter)
NIAGARA FRONTIER SECTION——
Reports P81, P920, P370, P601, P780, P974
Nomination Notice P609
Nomograph for Calculating Color Differences Using the Adams-Nickerson Equation, A (Adams, Derby Jr, Ernsberger and Solo) 640
Nonwoven Fabrics, Binders for (Sherwood) P323
Nonwoven Fabrics, Fibers and Equipment Used in the Manufacture of (Brennan) P583

Nonwoven Fabrics, Technology of (Lovin and Wenzell) P326
Nonwoven Fabrics—The Chemical and Processing Techniques (Taylor) P437
Northern New England Section (Sampson) P804
NORTHERN NEW ENGLAND SECTION——
Reports P289, P455, P743
Notice to Authors of Papers P122, P213, P369, P635
Notice to Manufacturers of Textile Chemical Specialties P846
Notice to Section Officials P30, P67, P81, P212, P487, P516, P709, P1003
Nuclear Radiation, Textile Users of (AATCC Committee on Nuclear Radiation) P777
Nylon Military Hosiery, Preliminary Investigation of Stretch-type (Zimmerman and Pope) 270
Officers, National P799
Olney Medal Award Candidates P86
Olney Medal, P J Wood to be Awarded 14th P841
Olney Medalist, Wood Named 14th P454
Organization of the AATCC (See AATCC, Organization of the)
Origins of Drycleaning—Camphene et le Degraisseur, The (Edelstein) 1
Orlon Acrylic Fiber—Application of Cationic Dyes, Dyeing of (Neary and Thomas) P625
Orlon 42 with an Anionic Azo Dye, Effect of Acids and Swelling Agents on the Dyeing of (Part I of "Dyeing of Hydrophobic Fibers") (Skinkle and Denio) P706
PACIFIC NORTHWEST SECTION——
Reports P514, P680
PACIFIC SOUTHWEST SECTION——
Reports P212, P708, P780, P974, P1006
Pad-Roll System, New Aspects of the (Mellbin) 770
Papers, Future P65, P148, P181, P194, P291, 460, 498, 564, P601, P634, 654, 693
Parachute Textile Materials, Changing Trends in Requirements for (Ross) P483
Past Presidents P800
PATENT DIGEST (Wengraf)——
Shrinkproofing of Wool with Monosulfuric Acid—Aftertreatment with Sulfites 22
Dyeing Acrylonitrile Fibers by Cuprous-Ion Technique—Vanadium, Molybdenum or Tungsten Salts Added 22
Shrinkproof Textiles—Diglycidyl Ethers Applied 22
Waterproofing Emulsions—Organosilicon Compounds plus Triethanolamine Titanate 23
Cellulose Derivatives Dyed with Acid Dyes—Bicyclic Bases Used 23
Aftertreatment of Direct Dyeings—Dicyandiamide-Formaldehyde plus Ammonium Salts 105
Polyacrylic Fibers Bleached with Permanganate 105
Creaseproof and Permanent Finishes—Combination of Aminoplasts with Polyvinylalcohol 105
Dyeing with Leucovats Sensitive to High Temperatures—Hydroxylamine Added 106
Dyeing Nylon—Pretreatment with Chlorosalicylic or Cresotinic Acids 106
Dyeing Acrylonitrile Fibers with Direct Dyes—Phosphonium Compounds Added 154
Applying Nylon Emulsions to Nylon Fabrics 221
Creaseproofing of Cellulosic Textiles—Polyepoxy Compounds Applied 221
Printing with Solubilized (Acylated) Azodyes—Fixation by Peroxides Containing Alkaline Media 221
Blue Azodyes on Cellulose Acetate—Developed in Presence of Nonionic Agents 222
Water-Repellent Silicone Resins—Emulsified with Stannous Hydroxide in Alkaline Medium 222
Gas-Fading Prevention by Impregnating with Alkali Phthalates 223
Water-repellent Treatment—Quaternized Condensates of Chloromethyl Acetamides and High Nitriles 258
Water-repellent Thermoplastic Fibers—Composition of Wax, Amine Soaps and Aluminum (or Zirconium or Titanium) Salts 303
Dyeing Acrylonitrile Polymers—Heat and Pressure Pretreatment 303
Bleaching Polyacrylonitrile Fibers—Treatment with Dilute Acids 303
Daylight Fluorescent Dyeings on Nylon—Acid Dyes Used 304
Union Dyeing of Wool—Cellulose Acetate Mixtures—Nonionic and Anionic Agents Added 336
Pigment Printing Composition Containing Cellulose Ester Mixtures 336
Wool Dyed in One-bath Chroming Process—Nonionic Amine Derivatives Added 375
Tippy Dyeing of Wool Prevented—Nonionic Amine Derivatives Used 375
Stripping and Lightening Wool Dyeings—Nonionic Amine Derivatives Used 375
Pigment Printing—Reaction Products of Polyamines and Crosslinking Agents 375
Metalized and Water-repellent Cloth 376
Wrinkle-resistant Finish Based on Acrolein-formaldehyde Condensates 415
Gas-fading Prevention—Dialkylaminoacrylate Polymers Applied 415
Dyeing of Synthetic Fibers with Acid Vats—Controlled pH Conditions and Temperatures Applied 415
Aftertreatment of Direct Dyeings—Dicyandiamide-Formaldehyde Condensates plus Copper Salts 416
Waved Finish on Textiles—Compressive Shrinking Device Used 416
Dyeing of Wool-Acrylic Fiber Blends—Certain Basic Dyes Used for Acrylic Portion 417
Dyeing of Mixtures of Wool and Acrylic Fibers—Staining of Wool by Basic Dyes Prevented 417
Preliminary Short Aging of Prints to Detect Defects in Printing 417
Apparatus for Continuous Dyeing—Turbulence Created by Serrations 418
Calender Effects Fixed with Resins—Mechanical Treatment in Wet State 500
Durable Calender Effects on Thermoplastic Goods—Mechanical Treatment in Wet State 500
Improving Rubbing Fastness of Azo Dyeings—Aftertreatment with Amine-Alkyleneoxide Condensates 500
Dyeing of Polyacrylic Fibers—Cuprous Ions Developed by Alternating Current 532
Shrink-resistant Wool—Polymers of Hydroxyalkyl Vinyl Derivatives Applied 532
Shrink-resistant Wool—Polymers of Chloro-substituted Acyclic Esters Applied 568
Hydrophobing of Textiles—Condensates of Zirconium Alcoholates and Fatty Acids Applied 648
Water-repellent Composition—Organo-silicones plus Titanium Compounds 648
Pigment Printing Paste—Polymers from Basic Nitrogen Compounds Reacted with Cross-linking Agents 696
Stabilizing Cellulose Fabrics—Alkylsiliconehalide Vapors 696
Oxidation Dyeing and Printing with Aniline-4-Sulfamic Acid 696
Diazoamino Compounds plus Naphthols Developed with Dichloro Adipic Acid 736
Direct Dyeings Metallized in Baths Containing Polyphosphoric Anions 737
Finishing Dacron Fabrics—Free Shrinking Followed by Hot Alkaline Treatment 928
Flameproofing with Diammonium Phosphate—Adding Polyamine Methylolmelamines 928
Flameproofing with Diammonium Phosphate—Adding Polyamine Compounds, Nitrogen Compounds and Certain Softeners 981
Patent Digest, Index to 107, 1010
Perkin, America's Debt to (Lenher) P131
PERKIN CENTENNIAL——
1956 Intersectional Contest:—
Cationic Softeners—Their Secondary Effects of Textile Fabrics (Philadelphia Section) P41
The Internal Application of Color in the Manufacture of Man-Made Fibers (Canadian Association of Textile Colourists and Chemists) P125
America's Debt to Perkin (Lenher) P131
History of the Art of Textile Printing (Baumann) P165
The Application of Colorants to Glass Fiber Textiles (Caroselli) P195
A Century of Progress in the Development of Colorfastness Test Methods for Textiles (Staples) P199
Color—The Catalyst of Commerce. Part II P235
The History of the Development of Fast Dyes (Fordemwalt) P244
Modern Textile Dyeing Techniques (Meunier) P250
The Standard Depths of Shade in Relation to the Assessment of Colorfastness of Dyes on Textiles (Rabe) P504
Book of Proceedings of the Perkin Centennial P679
pH and Lowered Air Rate, II—Effect of High (Dispersed Growth Aeration of Cotton Finishing Wastes) (Nemerow) 575
Phenomena in the Dyeing of Cellulose Acetate, Interfacial Film (Skinkle and Sherburne) 749
Philadelphia Section—(See Delaware Valley Section)
PIEDMONT SECTION——
Reports P36, P140, P193, P289, P559, P709, P780, P848, P886, P887
Piedmont Section Repeats as Intersectional Contest Winner P962
Pilling Tester, Random Tumble (Baird, Legere and Stanley) P365, P398
Polyamide Fibers with Metal Complex Dyes, The Dyeing of Wool, Hair and (Schoenpflug) 851
Potpourri, Dyeing of Synthetic Fibers—A Dyer's (Turnbull) P509
Practical Problems in Purchasing (Jones) P533
Preservation, New Developments in Textile (Klens and Stewart) 346
President, Address by the (Linberg) P739, P999
President, Greetings from the (Linberg) P793
President, Linberg Reelected P931
Presidents, Past P800
Printing, History of the Art of Textile (Baumann) P165
Problems in Inventory Control, Practical (Halbach) P549
Problems in Purchasing, Practical (Jones) P533
Processing of Lurex, Wet (Seidel) P27
Processing Techniques, Nonwoven Fabrics—Chemical and (Taylor) P437
Products and Developments, New 71, 117, 157, 190, 230, 262, 310, 341, 379, 421, 462, 494, 525, 565, 605, 646, 685, 717, 784, 849
Products Developed Since November, 1956, Alphabetical List of New 891
Program, Technical P796
Programs Wanted, Convention P887, P932
Progress in the Art of Bleaching (Easton and Weinberg) P161
Progress Report—AATCC Research (Dorn) P25
Properties and Fiber Markets, Textile (Kaswell) 689
Purchasing and Distribution of Textiles, The New Look in Military (MacLaughlin) P475
Purchasing, Practical Problems in (Jones) P533
Pursuit of Happiness, The (Wood) P1002
Quality Control, Design of a Luster-Meter for (Smith, Thompson and Kaye) 725
Quality Control, Introduction to (Romer) P537
Quantitative Reflectance Spectrophotometry of Dyeings, Some Graphical Aids to (Darbey) 465
Radiation, Textile Users of Nuclear (AATCC Committee on Nuclear Radiation) P777
Radioactivity in the Textile Industry, Applications of (Berstein) P399
Random Tumble Pilling Tester (Baird, Legefe and Stanley) P365, P398
Rate of Wool Dyeing, Effect of Certain Acid Dye Structures on the (Skinkle and Makuch) P578
Reducing Agent, How to Get the Most Out of a 499
Reflectance Spectrophotometry of Dyeings, Some Graphical Aids to Quantitative (Darbey) 465
Registrants, 36th Convention Attracts 1730 P953
Report—AATCC Research, Progress (Dorn) P25
Reporter Reaches Fortieth Birthday 789
Requirements for Parachute Textile Materials, Changing Trends in (Ross) P483
Requirements for Textiles, How Atomic Warfare Has Changed Army (Kennedy) P478
Research, Progress Report—AATCC (Dorn) P25
Researcher, Atomic Energy and the Textile (Siu) 391
Resin Identification on Textiles, A Rapid Test for (Howard) 313
Resin-Treated Cotton Fabrics, Aftermercerization of Methylolmelamine (Mazzeno Jr, Reinhardt, Markezich and Reid) 719
Resin-treated Cottons, The Effect of Silicone Softeners on (Simpson) P991
Retained Chlorine, Committee on Damage Caused by (Aurich) P408
Review of the Activities of the Committee—1953-1956 (Committee on Damage Caused on by Retained Chlorine) P237
Rhode Island School of Design P818
RHODE ISLAND SECTION——
Reports P141, P255, P413, P558, P682, P1004
Rhode Island Section (Joerger and Cady) P811
Salt Solutions and with Dyebaths, The Interaction of Cellulose with Simple (Moncrieff-Yeates and White, Jr) P87, P148
Sampson, Chapin Elected Honorary Members P448
Scouring, A Conservative Approach to the Development of Detergents for Raw Wool (Kobayashi) 694
Scouring, The Practical Aspects of Neutral Grease Wool (McNamara, Jr) 731
Sectional Chairmen, Greetings from the New England Region's (Bell, Caroselli and Gillick) P795

Sections, Activities of the Local ....(See Activities of the Local Sections)
Selective Solvents for Analyzing Textile Fiber Mixtures (Praeger) 497, 654
Shade in Relation to the Assessment of Colorfastness of Dyes on Textiles, The Standard Depths of (Rabe) P504
Silicone Softeners on Resin-treated Cottons, The Effect of (Simpson) P991
Sodium Hydrosulfite, Assay of (AATCC Committee on Analytical Methods) P143
Softeners on Resin-treated Cottons, The Effect of Silicone (Simpson) P991
Softeners-Their Secondary Effects on Textile Fabrics, Cationic (Philadelphia Section) P41
Solvay Activated Hydrogen Peroxide Bleaching Process (Steele and Rogers) P965
Solvents for Analyzing Textile Fiber Mixtures, Selective (Praeger) 497, 654
Sonic Techniques in the Textile Industry, Applications of (Junger) P58
SOUTH CENTRAL SECTION——
Reports P182, P290, P412, P455, P780
SOUTHEASTERN SECTION——
Reports P36, P141, P182, P370, P743, P937, P975
Special Events P797
Spectrophotometry of Dyeings, Some Graphical Aids to Quantitative Reflectance (Darbey) 465
Standard Depths of Shade in Relation to the Assessment of Colorfastness of Dyes on Textiles, The (Rabe) P504
Standardization of Test Methods for Textile Auxiliaries. II—Determination of Vat Acid Dispersion Power of Surfactants The (Schwen and Rackemann) 278
Standardizing Accelerated Aging Tests for Latex-Backed Fabrics, The Need for (Boggs and Taitel) 345
Story of Chinese Green, Lo-Kao, The (Edelstein) 433
Strength of Fabrics, The Tear (Steele) 329
Stretch-type Nylon Military Hosiery, Preliminary Investigation of (Zimmerman and Pope) 270
Study of the Variables Encountered in Natural Light Fading (AATCC Committee on Colorfastness to Light) P861
Sulfur Dyes, The (Crist and Rupp) P83
Surfactants, The Standardization of Test Methods for Textile Auxiliaries. II—Determination of Vat Acid Dispersion Power of (Schwen and Rackemann) 278
Synthetic Fibers—A Dyer's Potpourri, Dyeing of (Turnbull) P509
Synthetic Fur-pile Fabrics, Cleaning of (Lyle) P699
Synthetic-resin Finishing, Impregnation for Water Repellency and Its Logical Use with (Ruile) 947
Swelling Agents on the Dyeing of Orlon 42 with an Anionic Azo Dye, Effect of Acids and (Part I of "Dyeing of Hydrophobic Fibers") (Skinkle and Denio) P706
Tear Strength of Fabrics, The (Steele) 329
TECHNICAL COMMITTEE ON RESEARCH——
190th Meeting P60
191st Meeting P176
192nd Meeting P405
193rd Meeting P553
Technical Literature ....(See Literature, Technical)
Technical Papers, Abstracts of P833
Technical Program P796
Techniques, Modern Textile Dyeing (Meunier) P250
Technology of Nonwoven Fabrics (Lovin and Wenzell) P326
Test for Resin Identification on Textiles, A Rapid (Howard) 313
Test Methods for Textile Auxiliaries. II—Determination of Vat Acid Dispersion Power of Surfactants, The Standardization of (Schwen and Rackemann) 278
Test Methods for Textiles, A Century of Progress in the Development of Colorfastness (Staples) P199
Test Methods, Two New Drycleaning (AATCC Committee on Drycleaning Test Methods) P859
Tester, Random Tumble Pilling (Baird, Legere and Stanley) P365, P398
Tests for Latex-Backed Fabrics, The Need for Standardizing Accelerated Aging (Boggs and Taitel) 345
Tests with the Accelerotor, Wear (Marcormac and Richardson) 149
Textile Properties and Fiber Markets (Kaswell) 689
Textiles, The Future of (Leslie) P123
Toweling, Absorption of Water by and Drying of Untreated, Laundered, and Used and Laundered Cotton and Linen (Petzel) 569
Treasurer, Derby Appointed AATCC P64
Treatment with Dicyandiamide, Improvement of Heat Endurance of Cotton by (Sloan and Buras Jr) 529
Trends in Military Requirements, Changing (Symposium) P473
Uses of Nuclear Radiation, Textile (AATCC Committee on Nuclear Radiation) P777
Union Dyeing of Acrilan-Wool Blends, The Chem-acril Process for the (Hindle) P968
Variables Encountered in Natural Light Fading, A Study of the (AATCC Committee on Colorfastness to Light) P861
Vat Acid Dispersion Power of Surfactants, The Standardization of Test Methods for Textile Auxiliaries. II—Determination of (Schwen and Rackemann) 278
Vat Dyeing, Recent Developments in (Fletcher) P319
Vat Dyestuffs, Leucoesters of (Luttringhaus) P283
Vice Presidents, Greetings from the (Kaswell, Helmus, Smith and Morrill) P794
Warfare has Changed Army Requirements for Textiles, How Atomic (Kennedy) P478
Washing, Committee on Colorfastness to (Smith) P467
WASHINGTON SECTION——
Reports P81, P290, P743
Wastes, Dispersed Growth Aeration of Cotton Finishing (II—Effect of High pH and Lowered Air Rate) (Nemerow) 575
Water by and Drying of Untreated, Laundered, and Used and Laundered Cotton and Linen Toweling, Absorption of (Petzel) 569
Water Repellency and Its Logical Use with Synthetic-resin Finishing, Impregnation for (Ruile) 947
Wear Tests with the Accelerotor (Macormac and Richardson) 149
WESTERN NEW ENGLAND SECTION——
Reports P66, P140, P234, P290, P456, P514, P886, P974, P1005
Western New England Section (Goodwin) P812
Wet Processing of Lurex (Seidel) P27
Whitening Agents, Evaluation of Whitening Efficiency of Fluorescent (Allen) 425
Wood, A Compilation of Published Papers by P J P844
Wood Named 14th Olney Medalist P454
Wood to be Awarded 14th Olney Medal, P. J. P841
Wool Blends, The Chem-acril Process for the Union Dyeing of Acrilan—(Hindle) P968
Wool Dyeing, Effect of Certain Acid Dye Structures on the Rate of (Skinkle and Makuch) P578
Wool, Hair and Polyamide Fibers with Metal Complex Dyes, The Dyeing of (Schoenpflug) 851
Wool Scouring, A Conservative Approach to the Development of Detergents for Raw (Kobayashi) 694
Wool Scouring, The Practical Aspects of Neutral Grease (McNamara, Jr) 731
Wrinkle-resistant Finishes for Cotton, Comparison of (Cook, Roth, Salsbury, Switlyk and Van Loo) P585, 654
X-Ray Diffractometer, Characterization of Cellulose Derivatives by Means of the (Segal and Conrad) 637
Year, Highlights of the Past (Wood) 920
Your Hosts—The New England Sections P804

INDEX BY AUTHOR

AATCC COMMITTEE ON ANALYTICAL METHODS—
Assay of Sodium Hydrosulfite P443
AATCC COMMITTEE ON BLEACHING—
Determination of Hydrogen Peroxide in Bleach Baths P397
AATCC COMMITTEE ON COLORFASTNESS TO LIGHT—
A Study of the Variables Encountered in Natural Light Fading P861
AATCC COMMITTEE ON DAMAGE CAUSED BY RETAINED CHLORINE—
Review of the Activities of the Committee—1953-1956 P237
AATCC COMMITTEE ON DRYCLEANING TEST METHODS—
Two New Drycleaning Test Methods P859
AATCC COMMITTEE ON NUCLEAR RADIATION—
Textile Users of Nuclear Radiation P777
ADAMS, DOUGLAS P; DERBY JR, ROLAND E; ERNSBERGER, ROXY E and SOLO, Richard B—
A Nomograph for Calculating Color Differences Using the Adams-Nickerson Equation 649
ALLEN, EUGENE—
Evaluation of Whitening Efficiency of Fluorescent Whitening Agents 425
AURICH, RICHARD F—
Committee on Damage Caused by Retained Chlorine P409
BACON, OSBORNE C; PARKER, MEREDITH F and HORN, LEON F—
Formaldehyde Evolution from Textiles P933
BAUMANN, HERMAN P—
History of the Art of Textile Printing P165
BAYLEY, C H; ROSE, G R F and FRASER, M E—
Some Aspects of the Use of 2,2'—Dihydroxy 5,5'—Dichlorodiphenyl Methane as a Textile Fungicide 385
BAIRD, E M; LEGERE, L C and STANLEY, H E—
Random Tumble Pilling Tester P365, P398
BELL, EDWARD B; CAROSELLI, REMUS F and GILLICK JR, THOMAS J—
Greetings from the New England Region's Sectional Chairmen P795
BERSTEIN, IRVING A—
Applications of Radioactivity in the Textile Industry P399
BIERIG, ERWIN and NORWICK, BRAHAM—
A Chromatographic Method for the Identification of Amino Aldehyde Finishes on Textiles 314
BOGGS, ROY H and TAITEL, MAX—
The Need for Standardizing Accelerated Aging Tests For Latex-Backed Fabrics 345
BRENNAN, WENDELL E—
Fibers and Equipment Used In the Manufacture of Nonwoven Fabrics P583
BURAS JR, EDMUND M—
Chemical Modification of Natural Fibers 929
BURAS, JR, EDMUND M and SLOAN, WILLIAM G—
Improvement of Heat Endurance of Cotton by Treatment with Dicyandiamide 529
CADY, W H and JOERGER, R W—
Rhode Island Section P811
CANADIAN ASSOCIATION OF TEXTILE COLOURISTS AND CHEMISTS—
The Internal Application of Color in the Manufacture of Man-Made Fibers P125
CAROSELLI, R F—
The Application of Colorants to Glass Fiber Textiles P195
CAROSELLI, REMUS F; GILLICK JR, THOMAS J and BELL, EDWARD B—
Greetings from the New England Region's Sectional Chairmen P795
CONRAD, C M and SEGAL, LEON—
Characterization of Cellulose Derivatives by Means of the X-Ray Diffractometer 637
COOKE, T F; ROTH, P B; SALSBURY, J M; SWITLYK, G and VAN LOO, W J—
Comparison of Wrinkle-resistant Finishes for Cotton P585, 654
CRIST, JOHN L and RUPP, R E—
The Sulfur Dyes P83
DARBEY, ALBERT—
Some Graphical Aids to Quantitative Reflectance Spectrophotometry of Dyeings 465
DENIO, ALAN A and SKINKLE, JOHN H—
Dyeing of Hydrophobic Fibers. Part I—Effect of Acids and Swelling Agents on the Dyeing of Orlon 42 with an Anionic Azo Dye P706
DERBY JR, ROLAND E; ERNSBERGER, ROXY E; SOLO, RICHARD B and ADAMS, DOUGLAS P—
A Nomograph for Calculating Color Differences Using the Adams-Nickerson Equation 649
DORN, CHARLES W—
Progress Report—AATCC Research P25
Address by the Chairman of the Executive Committee on Research P740
DRAVES, CARL Z and PAROLLA, EVA A—
With Glycerine from Fiber to Fabric (Part I) 761
EASTON, B K and WEINBERG, N—
Progress in the Art of Bleaching P161
EDELSTEIN, SIDNEY M—
—Camphene et le Degraisseur—The Origins of Drycleaning 1
Lo-Kao, The Story of Chinese Green 433
EHMANN, FRANKLIN R—
Cost Accounting for Effective Control P539
ERNSBERGER, ROXY E; SOLO, RICHARD B; ADAMS, DOUGLAS P and DERBY JR, ROLAND E—
A Nomograph for Calculating Color Differences Using the Adams-Nickerson Equation 649
FLETCHER, J M—
Recent Developments in Vat Dyeing P319
FORDEMWALT, FRED—
The History of the Development of Fast Dyes P244, 340
FRASER, M E; BAYLEY, C H and ROSE, G R F—
Some Aspects of the Use of 2,2'—Dihydroxy 5,5'-Dichlorodiphenyl Methane as a Textile Fungicide 385
GILLICK JR, THOMAS J; BELL, EDWARD B and CAROSELLI, REMUS F—
Greetings from the New England Region's Sectional Chairmen P795
GOODWIN, ANDREW K—
Western New England Section P812
GUNTHARD, J—
Recent Advances in the Field of Acid and Substantive Anthraquinone Dyestuffs 9
HALBACH, HANS—
Practical Problems in Inventory Control P549
HELMUS, WELDON G; SMITH, H GILLESPIE; MORRILL, ELLIOTT and KASWELL, ERNEST R—
Greetings from the Vice Presidents P794
HINDLE, WALTER H—
The Chem-acril Process for the Union Dyeing of Acrilan-Wool Blends P968
HINTON, E H; IANNARONE JR, J J; SPEAKMAN, P L; LARSON, O S and HURT, R C—
Dyeing Blends of Dacron Polyester Fiber and Cotton P674
HORN, LEON F; BACON, OSBORNE C and PARKER, MEREDITH F—
Formaldehyde Evolution from Textiles P933
HOWARD, JOHN H—
A Rapid Test for Resin Identification on Textiles 313
HURT, R C; HINTON, E H; IANNARONE JR, J J; SPEAKMAN, P L and LARSON, O S—
Dyeing Blends of Dacron Polyester Fiber and Cotton P674
IANNARONE JR, J J; SPEAKMAN, P L; LARSON, O S; HURT, R C and HINTON, E H—
Dyeing Blends of Dacron Polyester Fiber and Cotton P674
JOERGER, R W and CADY, W H—
Rhode Island Section P811
JONES, HAROLD F—
Practical Problems in Purchasing P533
JUNGER, MIGUEL G—
Applications of Sonic Techniques in the Textile Industry P58
KASWELL, ERNEST R—
Textile Properties and Fiber Markets 689
KASWELL, ERNEST R; HELMUS, WELDON G; SMITH, H GILLESPIE and MORRILL, ELLIOTT—
Greetings from the Vice Presidents P794
KAYE, W I; SMITH, T M and THOMPSON, H A—
Design of a Luster-Meter for Quality Control 725
KENNEDY, STEPHEN J—
How Atomic Warfare has Changed Army Requirements for Textiles P478
KLEIN, ARTHUR F—
How a New Dye is Evaluated to Decide if it is Worth Marketing P489
KLENS, P F and STEWART, W J—
New Developments in Textile Preservation 346
KOBAYASHI, FRITZ F—
A Conservative Approach to the Development of Detergents for Raw Wool Scouring 694
LARSON, O S; HURT, R C; HINTON, E H; IANNARONE JR, J J and SPEAKMAN, P L—
Dyeing Blends of Dacron Polyester Fiber and Cotton P674
LEGERE, L C; STANLEY, H E and BAIRD, E M—
Random Tumble Pilling Tester P365, P398
LENHER, SAMUEL—
America's Debt to Perkin P131
LESLIE, FRANK—
The Future of Textiles P123
LINBERG, GEORGE O—
Address by the President P739, P999
Greetings from the President P793
LOVEN, L G and WENZELL, L P—
Technology of Nonwoven Fabrics P326
LUTTRINGHAUS, HANS—
Leucoesters of Vat Dyestuffs P283
LYLE, DOROTHY SIEGERT—
Cleaning of Synthetic Fur-Pile Fabrics P699
MacLAUGHLIN, VICTOR J—
The New Look in Military Purchasing and Distribution of Textiles P475
MACORMAC, A R and RICHARDSON, F M—
Wear Tests with the Accelerotor 149
MAKUCH, EDWARD W and SKINKLE, JOHN H—
Effect of Certain Acid Dye Structures on the Rate of Wool Dyeing P578
MARKEZICH, ANTHONY R; REID, J DAVID; MAZZENO JR, LAURENCE W and REINHARDT, ROBERT M—
Aftermercerization of Methylolmelamine Resin-Treated Cotton Fabrics 719
MAZZENO JR, LAURENCE W; REINHARDT, ROBERT M; MARKEZICH, ANTHONY R, and REID, J DAVID—
Aftermercerization of Methylolmelamine Resin-Treated Cotton Fabrics 719
Mc NAMARA JR, E J—
The Practical Aspects of Neutral Grease Wool Scouring 731
MELLBIN, BERTIL—
New Aspects of the Pad-Roll System 770
MEUNIER, P L—
Modern Textile Dyeing Techniques P250
MONCRIEFF-YEATES, MARY and WHITE, JR, HOWARD J—
The Interaction of Cellulose with Simple Salt Solutions and with Dyebaths P87, P148
MORRILL, ELLIOTT; KASWELL, ERNEST R; HELMUS, WELDON G and SMITH, H GILLESPIE—
Greetings from the Vice Presidents P794
NEARY, J P and THOMAS, R J—
Dyeing of Orlon Acrylic Fiber—Application of Cationic Dyes P625
NEMEROW NELSON, L—
Dispersed Growth Aeration of Cotton Finishing Wastes. II—Effect of High pH and Lowered Air Rate 575
NORTON, JOSEPH E—
Committee on Colorfastness to Light P406
NORWICK, BRAHAM and BIERIG, ERWIN—
A Chromatographic Method for the Identification of Amino Aldehyde Finishes on Textiles 314
PAINE, GEORGE P—
A message to Association Members Concerning Your National Headquarters P821
PANEL—
Color—The Catalyst of Commerce. Part II P235

PARKER, MEREDITH F; HORN, LEON F and BACON, OSBORNE C——
Formaldehyde Evolution from Textiles ... P933
PAROLLA, EVA A and DRAVES, CARL Z——
With Glycerine from Fiber to Fabric (Part I) ... 761
PETZEL, FLORENCE ELOISE——
Absorption of Water by and Drying of Untreated, Laundered, and Used and Laundered Cotton and Linen Toweling ... 569
PHILADELPHIA SECTION——
Cationic Softeners—Their Secondary Effects on Textile Fabrics P41
POPE, CLARENCE J and ZIMMERMAN, JOHN——
Preliminary Investigation of Stretch-Type Nylon Military Hosiery ... 270
PRAEGER, SIEGFRIED S——
Selective Solvents for Analyzing Textile Fiber Mixtures ... 497, 654
RABE, PAUL——
The Standard Depths of Shade in Relation to the Assessment of Colorfastness of Dyes on Textiles ... P504
RACKEMANN, C and SCHWEN, G——
The Standardization of Test Methods for Textile Auxiliaries. II—Determination of Vat Acid Dispersion Power of Surfactants ... 278
REID, J DAVID; MAZZENO JR, LAURENCE W; REINHARDT, ROBERT M and MARKEZICH ANTHONY R——
Aftermercerization of Methylolmelamine Resin-Treated Cotton Fabrics ... 719
REINHARDT, ROBERT M; MARKEZICH, ANTHONY R; REID, J DAVID; and MAZZENO JR, LAURENCE W——
Aftermercerization of Methylolmelamine Resin-Treated Cotton Fabrics ... 719
RICHARDSON, F M and MACORMAC, A R——
Wear Tests with the Accelerotor ... 149
ROGERS, S M and STEELE, WILLIAM R——
Solvay Activated Hydrogen Peroxide Bleaching Process ... P965
ROMER, M——
Introduction to Quality Control ... P537
ROSE, G R F; FRASER, M E and BAYLEY, C H——
Some Aspects of the Use of 2,2'—Dihydroxy 5,5'—Dichlorodiphenyl Methane as a Textile Fungicide ... 385
ROSS, JACK H——
Changing Trends in Requirements for Parachute Textile Materials ... P483
ROTH, P B; SALSBURY, J M; SWITLYK, G; VAN LOO, W J and COOKE, T F——
Comparison of Wrinkle-resistant Finishes for Cotton ... P585, 654
RUILE, JANS——
Impregnation for Water Repellency and Its Logical Use with Synthetic-resin Finishing ... 947
RUPP, R E and CRIST, JOHN L——
The Sulfur Dyes ... P83
SALSBURY, J M; SWITLYK, G; VAN LOO, W J; COOKE, T F and ROTH, P B——
Comparison of Wrinkle-resistant Finishes for Cotton ... P585, 654
SAMPSON, ALBERT E——
Northern New England Section ... P804
SCHMITT, C H A——
Automotive Fabrics—Factors which Affect Lightfastness ... P351
SCHOENPFLUG, ERNST——
The Dyeing of Wool, Hair and Polyamide Fibers with Metal Complex Dyes ... 851
SCHWEN, G and RACKEMANN, C——
The Standardization of Test Methods for Textile Auxiliaries. II—Determination of Vat Acid Dispersion Power of Surfactants ... 278
SEERY, T J——
Frontiers in Fabrics and Finishes ... P480
SEGAL, LEON and CONRAD, C M——
Characterization of Cellulose Derivatives by Means of the X-Ray Diffractometer ... 637
SEIDEL, LEON E——
Wet Processing of Lurex ... P27
SHERBURNE, EDWIN C and SKINKLE, JOHN H——
Interfacial Film Phenomena in the Dyeing of Cellulose Acetate 749
SHERWOOD, NEIL H——
Binders for Nonwoven Fabrics ... P323
SIMPSON, B G——
The Effect of Silicone Softeners on Resin-treated Cottons ... P991
SIU, R G H——
Atomic Energy and the Textile Researcher ... 391
SKINKLE, JOHN H and DENIO, ALAN A——
Dyeing of Hydrophobic Fibers. Part I—Effect of Acids and Swelling Agents on the Dyeing of Orlon 42 with an Anionic Azo Dye ... P706
SKINKLE, JOHN H and MAKUCH, EDWARD W——
Effect of Certain Acid Dye Structures on the Rate of Wool Dyeing ... P578
SKINKLE, JOHN H and SHERBURNE, EDWIN C——
Interfacial Film Phenomena in the Dyeing of Cellulose Acetate 749
SLOAN, WILLIAM G and BURAS, EDMUND M, JR——
Improvement of Heat Endurance of Cotton by Treatment with Dicyandiamide ... 529
SMITH, H GILLESPIE; MORRILL, ELLIOTT; KASWELL, ERNEST R and HELMUS, WELDON G——
Greetings from the Vice Presidents ... P794
SMITH, RALPH B——
Committee on Colorfastness to Washing ... P405
SMITH, T M; THOMPSON, H A and KAYE, W I——
Design of a Luster-Meter for Quality Control ... 725
SOLO, RICHARD B; ADAMS, DOUGLAS P; DERBY JR, ROLAND E and ERNSBERGER, ROXY E——
A Nomograph for Calculating Color Differences Using the Adams-Nickerson Equation ... 649
SPEAKMAN, P L; LARSON, O S; HURT, R C; HINTON, E H and IANNARONE JR, J J——
Dyeing Blends of Dacron Polyester Fiber and Cotton ... P674
STANLEY, H E; BAIRD, E M and LEGERE, L C——
Random Tumble Pilling Tester ... P365, P398
STAPLES, M L——
A Century of Progress in the Development of Colorfastness Test Methods for Textiles ... P199
STEELE, RICHARD——
The Tear Strength of Fabrics ... 329
STEELE, WILLIAM R and ROGERS, S M——
Solvay Activated Hydrogen Peroxide Bleaching Process ... P965
STEWART, W J and KLENS, P F——
New Developments in Textile Preservation ... 346
SWITLYK, G; VAN LOO, W J; COOKE, T F; ROTH, P B and SALSBURY, J M——
Comparison of Wrinkle-resistant Finishes for Cotton ... P585, 654
SYLVESTER, CHARLES A——
Introductory Remarks At 192nd TCR Meeting ... P405
SYMPOSIUM——
Changing Trends in Military Requirements ... P475
TAITEL, MAX and BOGGS, ROY H——
The Need for Standardizing Accelerated Aging Tests for Latex-Backed Fabrics ... 345
TAYLOR, JOHN T——
Nonwoven Fabrics—The Chemical and Processing Techniques P437
THOMAS, R J and NEARY, J P——
Dyeing of Orlon Acrylic Fiber—Application of Cationic Dyes P625
THOMSON, W L——
Far-Infrared for Textile Finishing ... P171
THOMPSON, H A; KAYE, W I and SMITH, T M——
Design of a Luster-Meter for Quality Control ... 725
TURNBULL JR, S G——
Dyeing of Synthetic Fibers—A Dyer's Potpourri ... P509
VAN LOO, W J; COOKE, T F; ROTH, P B; SALSBURY, J M and SWITLYK, G——
Comparison of Wrinkle-resistant Finishes for Cotton ... P585, 654
WARNER, JOHN F——
Committee on Dimensional Changes in Textile Fabrics ... P409
WEINBERG, N and EASTON, B K——
Progress in the Art of Bleaching ... P161
WENZELL, L P and LOVIN, L G——
Technology of Nonwoven Fabrics ... P326
WHITE, JR, HOWARD J and MONCRIEFF-YEATES, MARY——
The Interaction of Cellulose wit. Simple Salt Solutions and with Dyebaths ... P87, P148
WOOD, P J——
Highlights of the Past Year ... 920
The Pursuit of Happiness ... P1002
WOODRUFF, J A——
Finishes and Blends Form the Future ... P501
WYGAND, W J——
Recent Developments in Carpet Dyeing ... P987